HTR–2400

Home & Theater A/V Receiver

Preliminary Installation & User Manual

ada audio design associates®

602-610 Mamaroneck Avenue, White Plains, NY, 10605, www.ada-usa.com, 1-800-HD-AUDIO, Fax (914) 946-9620

SAFETY INSTRUCTIONS

READ INSTRUCTIONS - All the safety and operating instructions should be read before the appliances are operated.

RETAIN INSTRUCTIONS - The operating instructions should be retained for future reference.

HEED WARNING - All warnings on the appliances and in the operating instructions should be adhered to.

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FOLLOW INSTRUCTIONS - All operating and use instructions should be followed.

WATER AND MOISTURE - The appliances should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

LOCATION - The appliances should be installed in a stable location.

WALL OR CEILING MOUNT - The appliances should not be mounted to a wall or ceiling.

VENTILATION - The appliances should be situated so that their location or position does not interfere with their proper ventilation. For example, the appliances should not be situated on a bed, sofa, rug or similar surface that may block the ventilation openings.

HEAT - The appliances should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances that produce heat.

POWER SOURCES - The appliances should be connected to a power supply only of the type described in the operating instructions or as marked on the appliances.

GROUNDING - Make sure that the units in the system are always connected to a standard three-prong grounded outlet (the circular pin is ground). When operating this unit at a higher voltage with a different power cord configuration, consult your dealer for the proper power cord/outlet combination to use before operating this unit.

POWER CORD PROTECTION - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the points where they exit from the appliances.

CLEANING - The appliances should be cleaned only with a polishing cloth or a soft dry cloth. Never clean with furniture wax, benzine, insecticides or other volatile liquids since they may corrode the face plates.

POWER LINES - An outdoor antenna should be located away from power lines.

PERIODS OF DISUSE - The power cord of the appliances should be unplugged from the outlet when the units are not in use for a long period of time.

OBJECT AND LIQUID ENTRY - Care should be taken so that objects do not fall and liquids are not spilled into the enclosures through openings.

DAMAGE REQUIRING SERVICE - The appliances should be serviced by an authorized service center or qualified service personnel when:

- The power supply cords or plugs have been damaged; or
- Objects have fallen, or liquid has been spilled into the appliances; or
- The appliances have been exposed to rain; or
- The appliances do not appear to operate normally or exhibit a marked change in performance; or
- The appliances have been dropped; or the enclosures have been damaged.

SERVICING - The user should not attempt to service the appliances beyond that described in the operating instructions. For all other servicing, contact the factory.

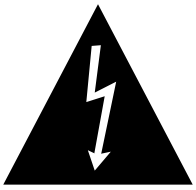
WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THE APPLIANCES IN THIS SYSTEM TO RAIN OR MOISTURE. REPLACE FUSE ONLY AS MARKED.

CAUTION:

TO PREVENT ELECTRIC SHOCK, DO NOT PLUG THE UNITS IN THIS SYSTEM INTO ANY OUTLET OR EXTENSION CORD WITHOUT THE STANDARD THREE-PRONG CONFIGURATION, WHERE THE CIRCULAR HOLE IS USED FOR THE GROUND PLUG.

IMPORTANT:



The lightning flash with the arrowhead, within an equilateral triangle, is intended to alert the user of the presence of un-insulated "dangerous voltage" within the products' enclosures that may be of sufficient magnitude to constitute a risk of electrical shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:

TO PREVENT RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS ARE INSIDE ANY OF THE UNITS IN THIS SYSTEM. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The exclamation point within the equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliances.

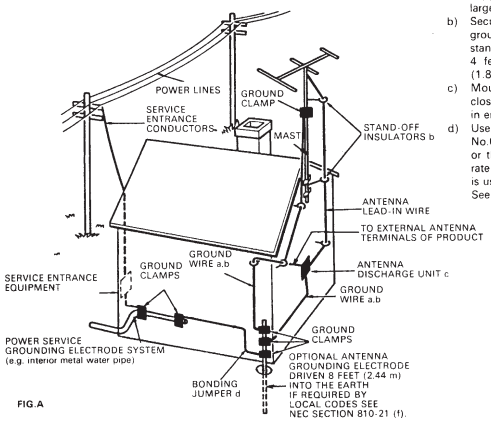

POWER LINES
GROUND CLAMP
SERVICE ENTRANCE CONDUCTORS
MAST
STAND-OFF INSULATORS b
ANTENNA LEAD-IN WIRE
TO EXTERNAL ANTENNA TERMINALS OF PRODUCT
GROUND WIRE a,b
GROUND CLAMPS
ANTENNA DISCHARGE UNIT c
SERVICE ENTRANCE EQUIPMENT
GROUND WIRE a,b
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (e.g. interior metal water pipe)
OPTIONAL ANTENNA GROUNDING ELECTRODE DRIVEN 8 FEET (2.44 m) INTO THE EARTH IF REQUIRED BY LOCAL CODES SEE NEC SECTION 810-21 (f).
BONDING JUMPER d

FIG.A

a) Use No. 10 AWG (5.3 mm^2) copper, No. 8 AWG (8.4 mm^2) aluminum, No. 17 AWG (1.0 mm^2) copperclad steel, bronze wire, or larger as ground wire.
b) Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22 meters) to 6 feet (1.83 meters) apart.
c) Mount antenna discharge unit as closely as possible to where lead-in enters house.
d) Use jumper wire not smaller than No.6 AWG (13.3 mm^2) copper, or the equivalent, when a separate antenna-grounding electrode is used.
See NEC Section 810-21 (j).

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All specifications subject to change without prior notice.
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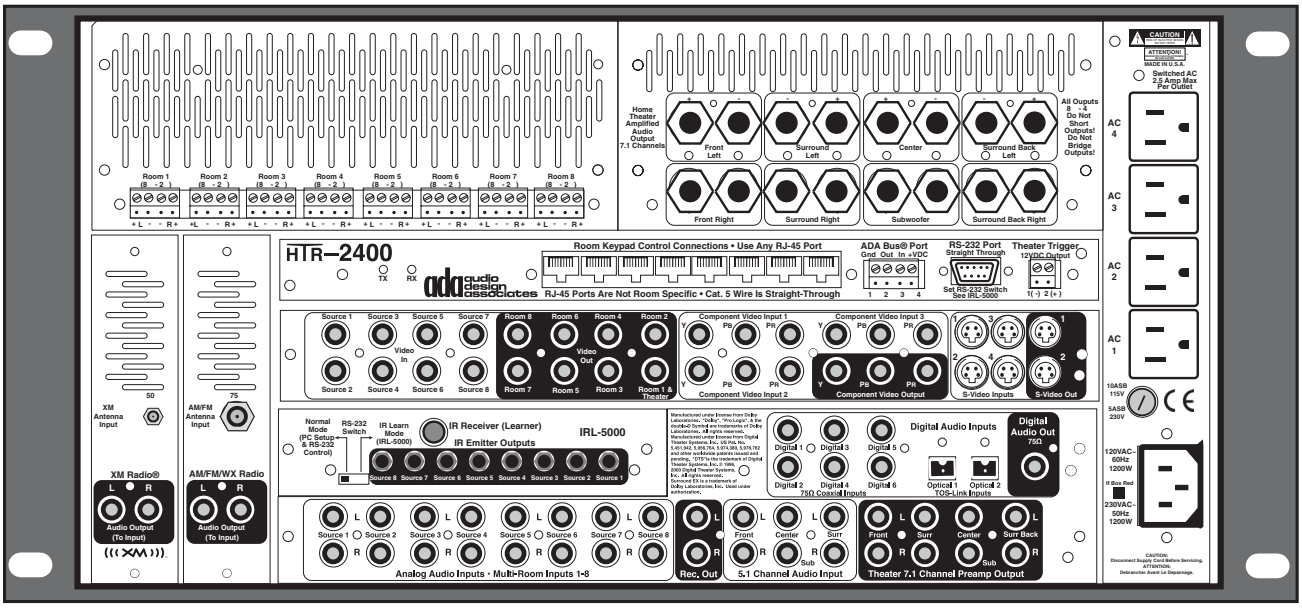
HTR-2400 Rear Panel Connections

When installing the HTR-2400, you will need to connect audio and video sources for the home and theater, digital sources and S-Video/Component video for the theater, antenna connections for the tuners, AC and IR source connections, keypads, perhaps RS-232, speaker lines for the house, speaker lines for the theater, perhaps line-level theater outputs, low-voltage triggers for theater, and record analog, digital and S-Video outputs.

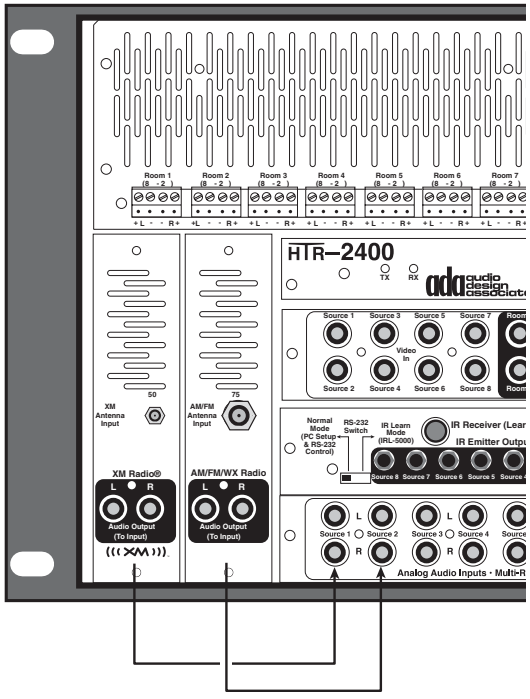


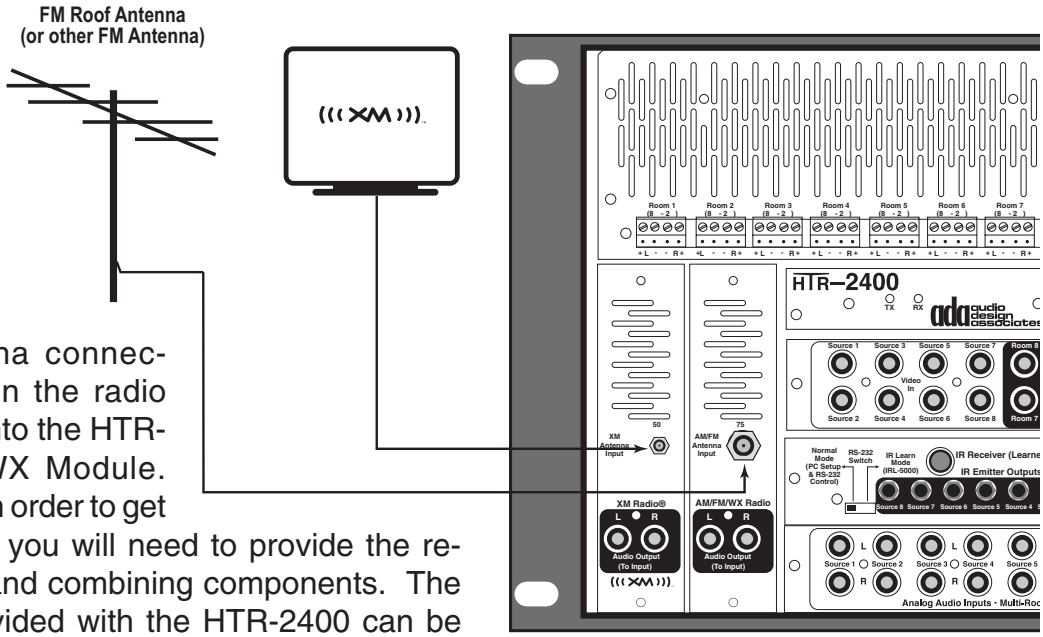
To ensure that proper connections are maintained, wire management needs to be considered. It is recommended that wires and cables be fastened in such a way that as much of their weight as possible be secured to something other than the actual connector or jack on the HTR-2400. For pull out racks, make certain that there is enough room behind the rack to permit the wires and cables to retract without pinching, pulling or crunching.

Tuner Connections

The HTR-2400 features two tuner modules. At the time of this printing, the modules available are an XM Radio Module and an FM/AM/WX (Weatherband) radio module. These modules, like all of the HTR-2400's rear-panel assembly, are cards that slide in and out of the chassis on tracks. As such, they can be updated or removed.

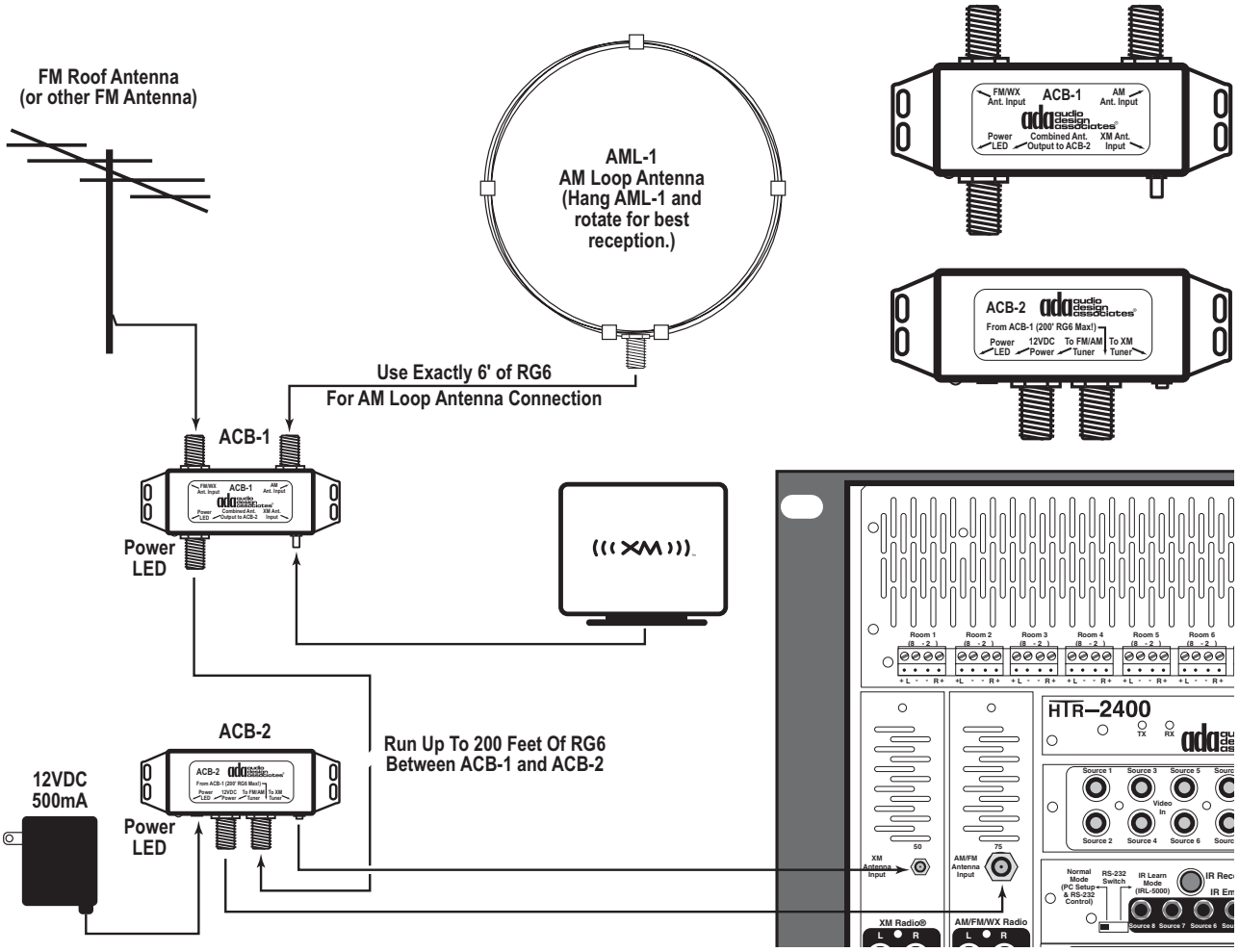
The tuner modules feature an antenna input and a stereo audio output. In order to hear the output of these tuners, you need to loop this audio output to inputs on the HTR-2400. Typically, you will loop Tuner Module one (far left side of rear panel) to Audio Input 1 and Tuner Module 2 to Audio Input 2 as show to the right.





For basic antenna connections, one can run the radio antenna directly into the HTR-2400's FM/AM/WX Module. Please note, that in order to get both FM and AM, you will need to provide the required antennas and combining components. The XM Antenna, provided with the HTR-2400 can be connected to the HTR-2400. Again, placement of the XM antenna needs to be in such a manner that XM Radio reception is possible.

ADA also provides the ACB Antenna Combiner Boxes (ACB-1 and ACB-2) which take both the FM antenna, AM antenna, and XM antenna and combine these signals on a single RG-6 type coax cable. This cable can be run up to 200 feet to the HTR-2400's equipment rack. The ACB-1 and ACB-2 are sold as a set and the AML-1 AM Loop Antenna is sold separately.



SOURCE CONNECTIONS (HOME & THEATER)

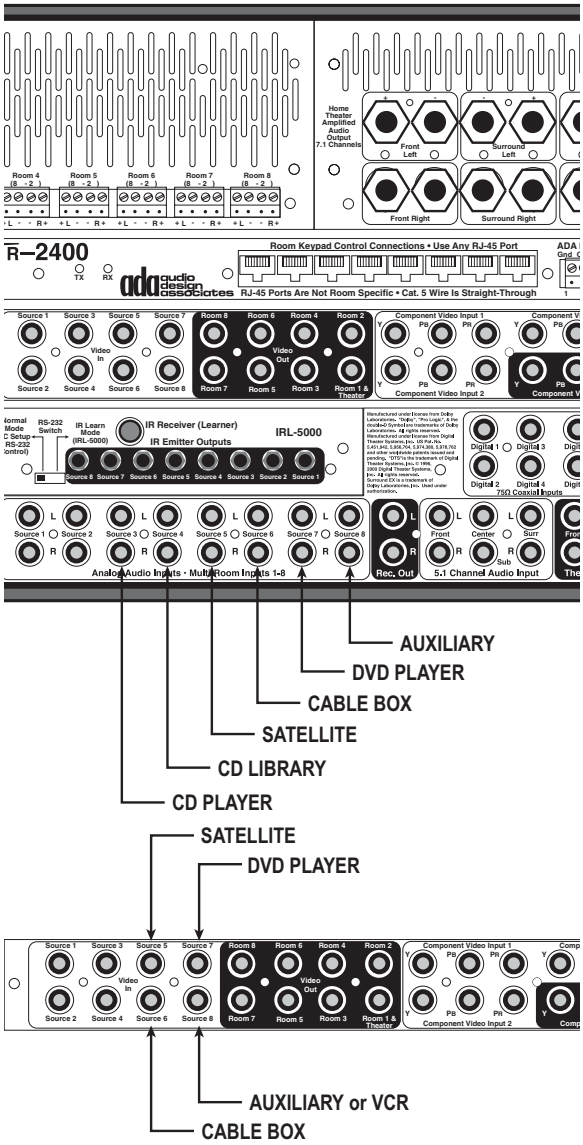
Because the HTR-2400 is actually two system in one, it is important to remember that the analog sources that play in the house can also play in the theater while the digital sources that play in the theater will not play in the house. As such, some sources will require two audio connections.

For example, a DVD player will require an analog audio connection for playback in the house while the theater will require a digital audio connection for playback of 5.1 encoded material. The theater connections will be discussed later.

The HTR-2400's out of the box source setup is:

SOURCE NAME/#	AUDIO INPUT	VIDEO INPUT
XM TUNER 1	ANALOG 1	OPEN
FM TUNER 2	ANALOG 2	OPEN
CD PLAYER 3	ANALOG 3	OPEN
CD LIBRARY 4	ANALOG 4	OPEN
SATELLITE 5	ANALOG 5	VIDEO 5
CABLE BOX 6	ANALOG 6	VIDEO 6
DVD PLAYER 7	ANALOG 7	VIDEO 7
AUXILIARY 8	ANALOG 8	VIDEO 8

Even if you are not distributing composite video throughout the house, you will still want to connect the sources' composite video outputs to the HTR-2400. Because the front panel 16 x 9 color LCD display only runs composite video, in order to preview images on this display, the HTR-2400 must receive a composite video signal.



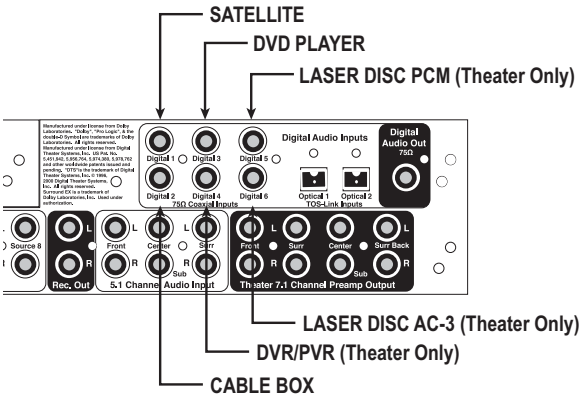
SOURCE CONNECTIONS (THEATER ONLY)

The Home Theater source setup is more flexible than the multi-room system. The multi-room audio and video jacks are linked together numerically (audio input 1 tracks video input 1, audio input 2 tracks video input 2, etc.). For the Home Theater, the source names (input names) can be openly assigned to any audio jack (analog or digital), composite video, S-Video, and component video input. This makes it easy to both customize the HTR-2400 to your particular installation and maximize your inputs.

While the HTR-2400's out of the box setup (as shown in the chart to the right) shows for 20 input labels, note that several use the same jacks.

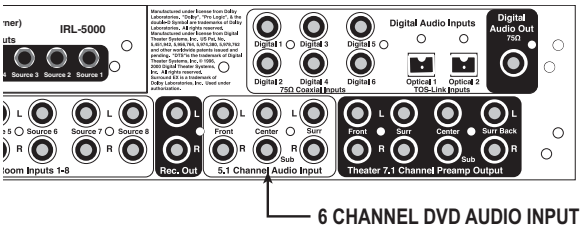
INPUT NAME/#	AUDIO	VIDEO	S-VIDEO	COMPONENT
XM TUNER 1	ANALOG 1	OFF	OFF	OFF
FM TUNER 2	ANALOG 2	OFF	OFF	OFF
CD PLAYER 3	ANALOG 3	OFF	OFF	OFF
CD LIBRARY 4	ANALOG 4	OFF	OFF	OFF
SATELLITE 5	DIGITAL 1	VIDEO 5	S1	C1
CABLE BOX 6	DIGITAL 2	VIDEO 6	S2	C2
DVD PLAYER 7	DIGITAL 3	VIDEO 7	S3	C3
AUXILIARY 8	ANALOG 8	VIDEO 8	S4	OFF
VCR 9	ANALOG 8	VIDEO 4	S4	OFF
DVR/PVR 10	DIGITAL 4	VIDEO 3	OFF	OFF
VIDEOGAME 11	ANALOG 8	VIDEO 3	OFF	OFF
CAMCORDER 12	ANALOG 8	VIDEO 3	OFF	OFF
COMPUTER 13	ANALOG 8	VIDEO 3	OFF	OFF
LASERDISC 14	DIGITAL 5	VIDEO 2	OFF	OFF
LASRER AC3 15	DIGITAL 6	VIDEO 2	OFF	OFF
PHONOGRAPH 16	ANALOG 8	OFF	OFF	OFF
SAT RECORD 17	ANALOG 5	VIDEO 5	S1	C1
TV RECORD 18	ANALOG 6	VIDEO 6	S2	C2
DVD RECORD 19	ANALOG 7	VIDEO 7	S3	C3
DVR RECORD 20	ANALOG 8	VIDEO 3	S4	OFF

Because you can limit the number of inputs displayed, rename the source names, reassign jacks, this setup serves only as an example of what can be done and corresponds to the HTR-2400's out of the box factory default setup.

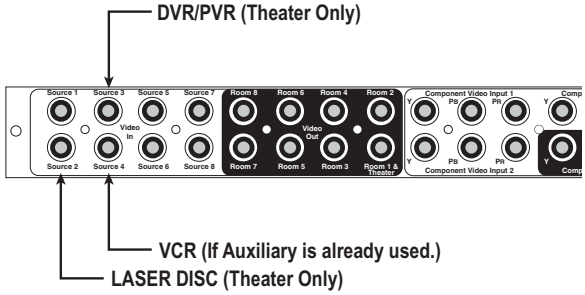


For digital audio sources, if coax type connections are available, ADA suggests using these over TOS-Link connectors. When using TOS-Link interconnects ADA suggests using the best caliber cable available (frosted tip or convex tip). TOS-Link cables have been known to reflect against the TOS-Link receiver causing for audio dropouts. Better cables help prevent this.

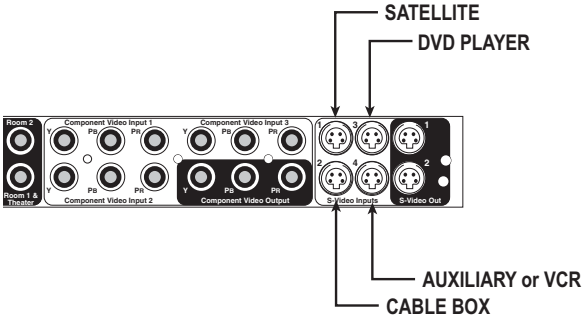
For DVD Audio discrete 5.1 playback, a six-channel analog bypass input is used on the HTR-2400. Please note, that in order to access this input, you will need to select a source name that is not used, relabel it to read DVD AUDIO, and assign the audio input to ANALOG BYPAS.



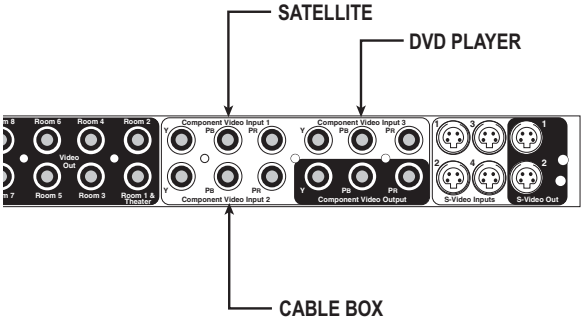
Because the HTR-2400's Home Theater has open input assignment, it can use open (or unused) composite video inputs. In a common setup, house inputs 1-4 are used by the tuners and CD players and these devices typically do not output any video. As such, the Home Theater can use these video inputs for theater specific sources like a DVR, VCR or Laser Disc player.



The S-Video switcher of the HTR-2400 permits four S-Video signals to be routed to two outputs. Both outputs play the same signal. Please note that an S-Video input only comes out of an S-Video output.

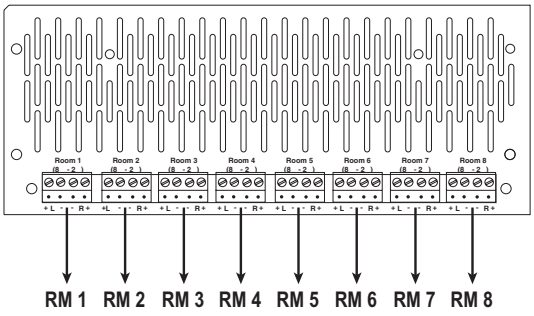


The component video switcher of the HTR-2400 permits three component video signals to be routed to one component video output. The component video output only routes component video inputs. If you wish to view composite or S-Video sources on your display, you will need to connect both composite video, S-Video and component video from the HTR-2400 to your display device.



Multi-Room Speaker & Video Outputs

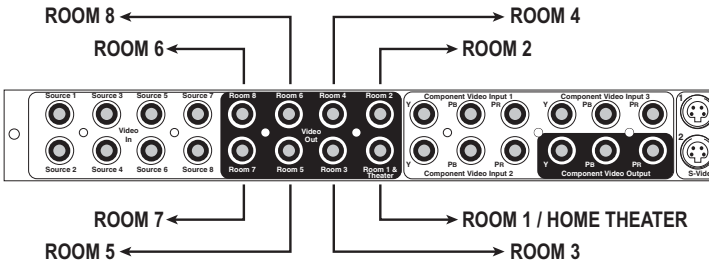
The HTR-2400 provides class D (digital) power amplification for the eight rooms in the house. Each zone output is stable down to 2 Ohms but best performance will be achieved when operating speaker loads in the 8-4 Ohm range. The room amplifier channels are bridged. This means that the ground (-) is unique to the left and right channels. You cannot short the grounds together because they are not common. Because of the close proximity of all speaker outputs, pay close attention to cleanly terminate speaker wires.



GROUND (-) FOR LEFT AND RIGHT CHANNELS ARE INDEPENDENT.

DO NOT SHORT GROUNDS!
DO NOT SHORT SPEAKER!
DO NOT BRIDGE CHANNELS!
STABLE TO 2 OHMS!

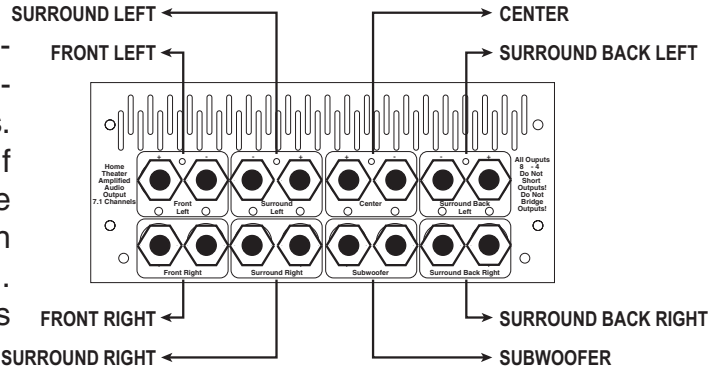
Each zone also has a composite video output. These can be used to provide video to local TVs or video capable touch-screens.



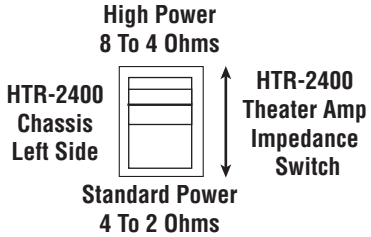
Room 1 shares its video output with Home Theater zone. If <u>any</u> of the Home Theater sources have their composite video active (set to ON), even if that source is not selected, then as Room 1 selects a source, video will not follow. However if the Home Theater is only being driven by S-Video or component video and all home theater sources have composite video set to OFF, then when an input is selected for Room 1, the video will follow. This feature permits you to determine if Room 1 is a video capable zone or not. For a flexible Home Theater setup, ADA suggests assigning Room 1 to a zone that does not have a video display.

Theater Speaker, Audio & Video Outputs

The HTR-2400 features a Class A/B high-current power amplifier for the Home Theater zone. This amplifier is stable to 4 Ohms. Do not attempt to bridge this amplifier. If you are using active subwoofers and/or are not using back surround speakers, you can leave these speaker channels unused. Make certain that your speaker connections are clean and secure.

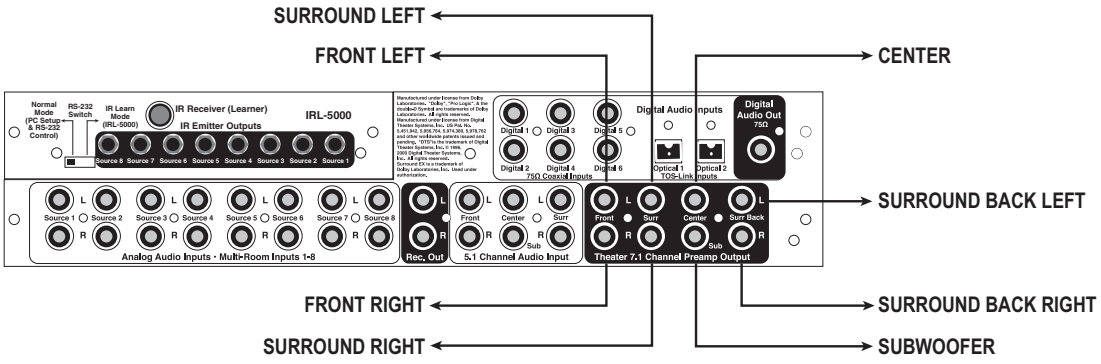


DO NOT SHORT SPEAKERS & BRIDGE CHANNELS!
STABLE TO 4 or 2 OHMS BASED ON SIDE PANEL AMPLIFIER IMPEDANCE SWITCH POSITION.

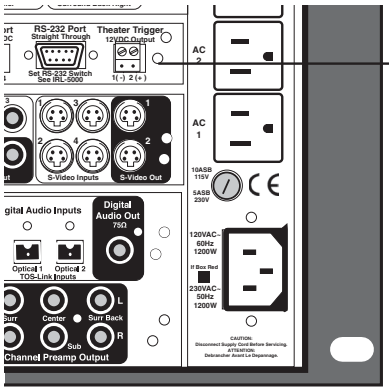


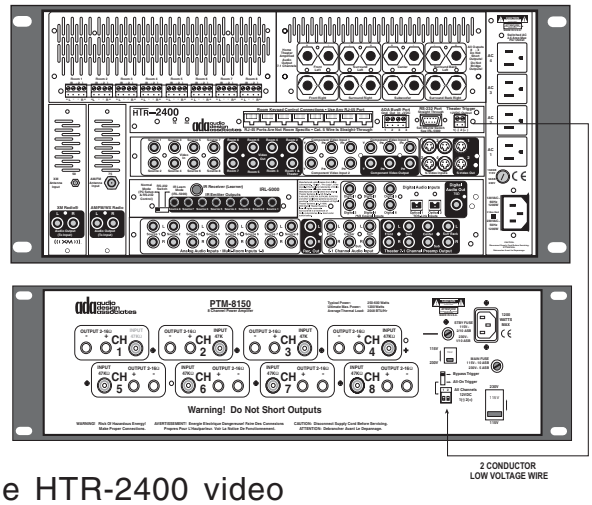
The HTR-2400 features a Theater Amplifier Impedance Switch located on the left side of the chassis. In the up position, you will get more power but the amplifier is only stable to 4 Ohms. In the down position, the amplifier is stable to 2 Ohms.

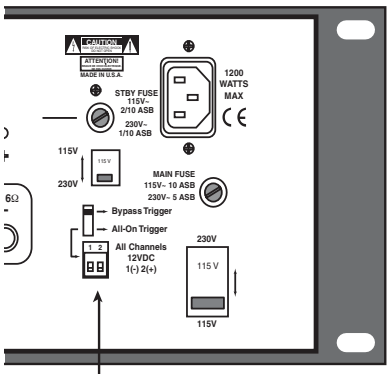
The HTR-2400 also features line-level audio outputs for the home theater zone. In many cases, while you may be using the power amplifier in the HTR-2400 for all of the theater's speakers, you may need to use its line-level audio outputs for connection to a self-powered (active) subwoofer. Alternately, you can connect additional power amplifiers or a multi-channel power amplifier to the HTR-2400.



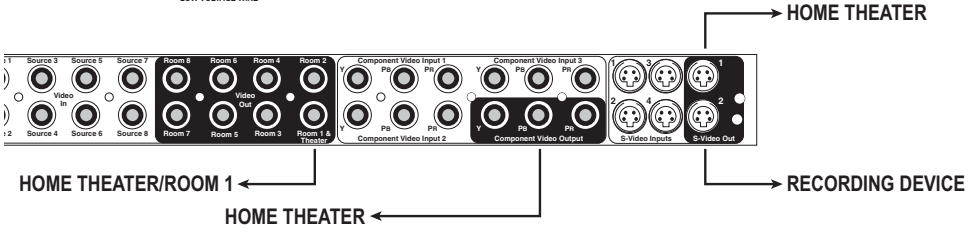
In the event that you are using an external power amplifier in the Home Theater, the HTR-2400 features a low-voltage trigger output (12VDC) that can be used to trigger an ADA power amplifier. Using a 2-conductor low-voltage wire, connect the HTR-2400 trigger to the trigger input on the ADA power amplifier (set the amplifier Trigger Switch accordingly). You will also need to set the DC Trigger to ON when programming the HTR-2400 Theater Sources.



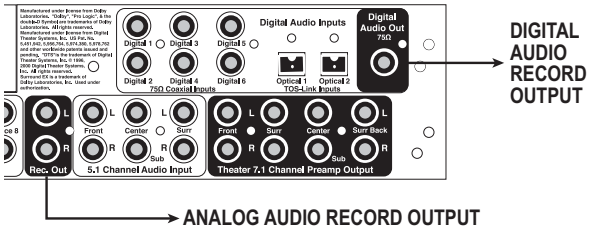




The HTR-2400 video outputs connect to the Theater's video display. The extra S-Video output can connect to a recording device.

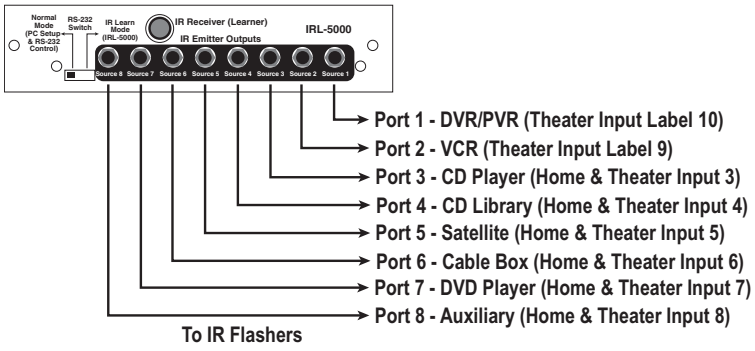


The HTR-2400 features an analog and digital audio output which track the source playing in the theater. These can be connected to recording devices. The analog output only passes analog sources and the digital output only passes digital sources.



IR Learner - Connections & Features

The HTR-2400 features an internal eight source IR Learner that is based on ADA's IRL-5000. The latter section of this manual discusses the programming of the IRL. The diagram to the right shows the out of the box setup of the HTR-2400. Ports can be reassigned during the HTR-2400 setup to suit your custom installation.

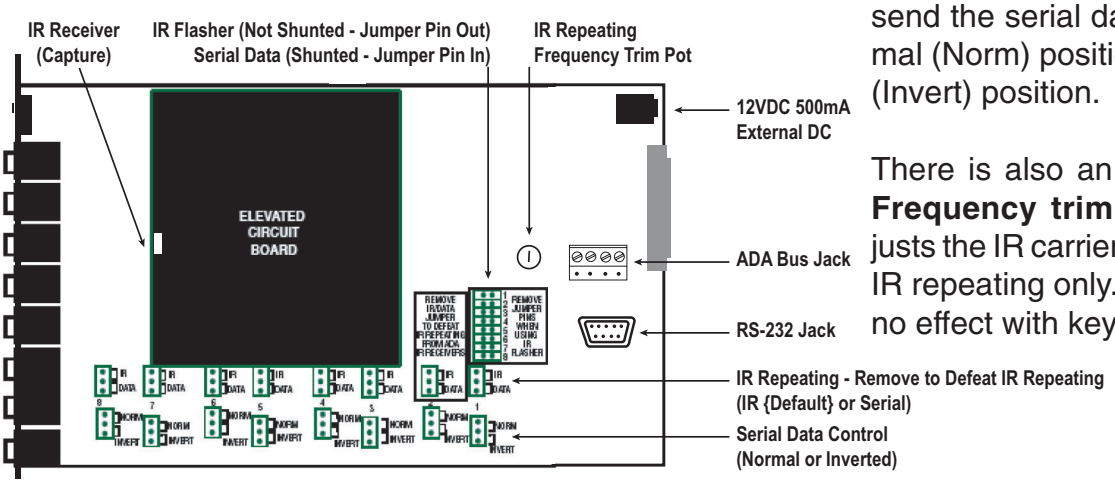

Normal Mode (PC Setup & RS-232 Control)
RS-232 Switch
IR Learn Mode (IRL-5000)
IR Receiver (Learner)
IR Emitter Outputs
IRL-5000
Source 8 Source 7 Source 6 Source 5 Source 4 Source 3 Source 2 Source 1
Port 1 - DVR/PVR (Theater Input Label 10)
Port 2 - VCR (Theater Input Label 9)
Port 3 - CD Player (Home & Theater Input 3)
Port 4 - CD Library (Home & Theater Input 4)
Port 5 - Satellite (Home & Theater Input 5)
Port 6 - Cable Box (Home & Theater Input 6)
Port 7 - DVD Player (Home & Theater Input 7)
Port 8 - Auxiliary (Home & Theater Input 8)
To IR Flashers

The IRL can be removed to alter IR port operation or to even program the IRL in the shop while the HTR-2400 chassis begins to be installed. To do this, simply connect a 12VDC 500mA power supply to the IRL board to program the IRL outside of the HTR-2400 chassis.

There are three types of jumper pin settings; IR Flasher, IR Repeating, and Serial Data Control. The **IR Flasher jumper** pins are a group of eight jumper pins together. The out of the box setup has these jumper pins offset (un-shunted) so the pins are there but simply not in place. When these pins are offset (not in place, un-shunted), the port they reference are set to use an IR flasher (emitter). When the jumper pin is in place (shunted), the port is set for serial data control with the IR carrier stripped out.

The other two types of jumper pins are grouped by port number. The **IR Repeating jumper** pin determines if the port will pass IR that comes down the ADA Bus from IR receivers located in keypads (or the IRR-5000). To defeat IR repeating entirely for a port, remove or offset the jumper pin. If you require IR repeating, set the jumper pin to the appropriate position (IR flasher or serial connection {no IR carrier}). **If the IRL is working from the PC program's Simulator but not from the keypads, and the keypads have been programmed to track the appropriate IRL ports, then turn IR repeating OFF by offsetting (removing) the IR repeating jumpers.** REASON - When a keypad issues a transport command, the RS-232 code for the IRL is sent down the ADA Bus to the IRL so that it can then issue the source's IR command. If repeating is on, the keypad's command first emits through the IR flasher. If the source component's IR receiver is slow to cool down (so that it can take the next IR command), when the IRL releases the actual command (a moment later), the source component's IR receiver may reject it. By turning off IR repeating, only the IRL source function is sent.

The last jumper pin is the **Serial Data Control jumper** pin which is only used if you are connecting to a source component's rear panel serial data connection. Here you can opt to send the serial data in the normal (Norm) position or inverted (Invert) position.


IR Receiver (Capture)
IR Flasher (Not Shunted - Jumper Pin Out)
Serial Data (Shunted - Jumper Pin In)
IR Repeating Frequency Trim Pot
ELEVATED CIRCUIT BOARD
12VDC 500mA External DC
ADA Bus Jack
RS-232 Jack
IR Repeating - Remove to Defeat IR Repeating (IR {Default} or Serial)
Serial Data Control (Normal or Inverted)

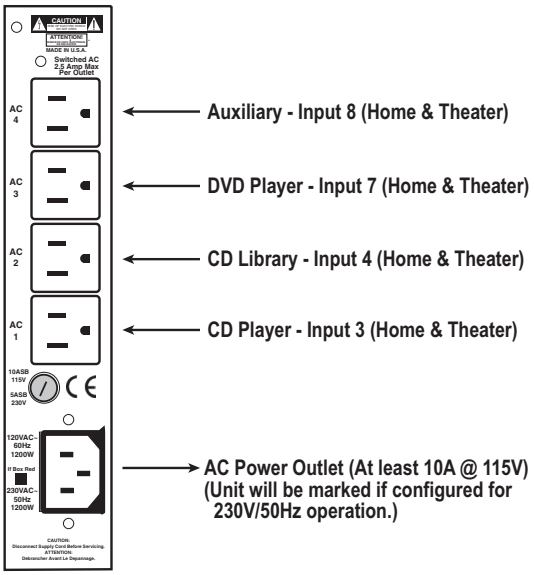
There is also an IR **Repeater Frequency trim pot** that adjusts the IR carrier frequency for IR repeating only. This pot has no effect with keypad control.

SOURCE AC CONNECTIONS

The HTR-2400 features four switched AC outlets for turning sources on and off based on usage. **These outlets should not be used with hi-current drawing components such as power amplifiers.**

The HTR-2400's out of the box setup has these four outlets assigned to the CD Player, CD Library, DVD Player and Auxiliary inputs. You can reassign their usage during the setup of sources for both the home and theater.

If the HTR-2400 has been internally modified for 230VAC - 50Hz operation, the small square to the left of the EIC AC receptacle will be marked.

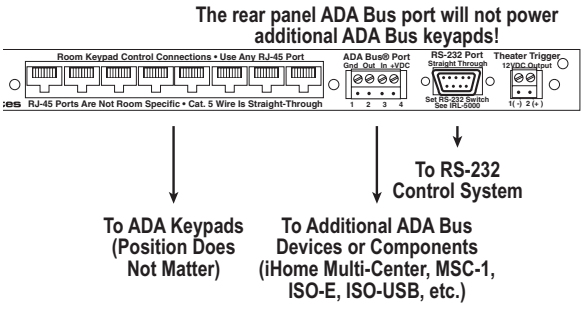

AC 4
AC 3
AC 2
AC 1
Auxiliary - Input 8 (Home & Theater)
DVD Player - Input 7 (Home & Theater)
CD Library - Input 4 (Home & Theater)
CD Player - Input 3 (Home & Theater)
AC Power Outlet (At least 10A @ 115V)
(Unit will be marked if configured for
230V/50Hz operation.)

KEYPAD CONNECTIONS

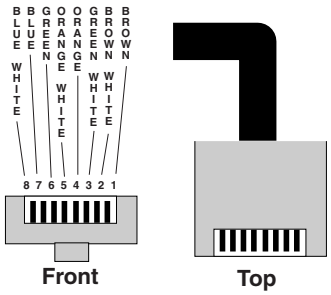
ADA keypads connect directly to the HTR-2400's eight RJ-45 female connectors. The suggested wire is standard Cat. 5 cable. **Wiring is the most critical aspect of an ADA installation. ADA keypads wire straight-through (no crisscross). Make certain that your wiring is free of error or damage prior to connecting keypads!** The diagram and chart to the right show a typical Cat. 5 to RJ-45 connection. Your color code may vary but it is critical that point to point connections be in tact.

If you need to connect additional ADA keypads, please contact ADA as to the best result based on the number of extra keypads needed. The HTR-2400's ADA Bus jack cannot simply connect to another ADA wire harness (i.e. WH-2000) and then to more keypads because the power supply on the ADA Bus jack is not designed to drive keypads. In order for this to function, an additional power-supply will most likely be required.

In the event your Cat. 5 cable is damaged, you can still get full operation by leaving off both pins 1 & 8 (leave both wires off even if you have 7 good Cat. 5 wires).

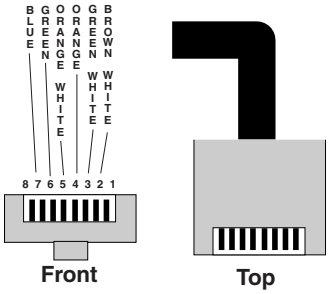

The rear panel ADA Bus port will not power additional ADA Bus keyapds!
Room Keypad Control Connections • Use Any RJ-45 Port
ADA Bus® Port
Gnd Out In +VDC
1 2 3 4
RS-232 Port
Straight Through
Set RS-232 Switch See IRL-5000
Theater Trigger
12VDC Output
RJ-45 Ports Are Not Room Specific • Cat. 5 Wire Is Straight-Through
To ADA Keypads (Position Does Not Matter)
To Additional ADA Bus Devices or Components (iHome Multi-Center, MSC-1, ISO-E, ISO-USB, etc.)
To RS-232 Control System

RJ-45 Cat. 5 Cable Connector



PIN NUMBER	COLOR	FUNCTION
PIN 1	BROWN	+20V
PIN 2	BROWN/WHITE	GND
PIN 3	GREEN/WHITE	TX-
PIN 4	ORANGE	RX+
PIN 5	ORANGE/WHITE	RX-
PIN 6	GREEN	TX+
PIN 7	BLUE	+20V
PIN 8	BLUE/WHITE	GND

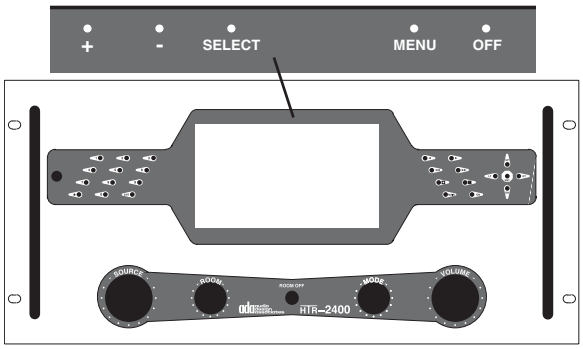
RJ-45 Cat. 5 Cable Connector



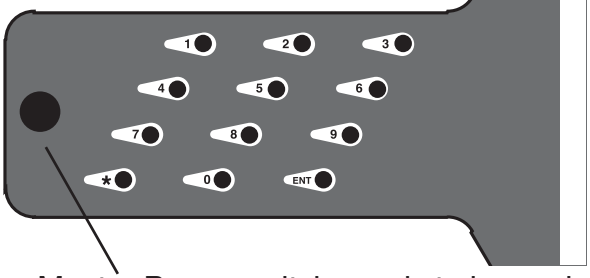
FRONT PANEL CONTROL

The HTR-2400's easy to use front panel permits you to control the entire home. The buttons flanking the LCD display are source transport functions (source control). How these operate will depend on how your custom installation professional programmed the HTR-2400's infrared learner (IRL). Because the two tuners are internal to the HTR-2400 and are not controlled by the IRL, their operation is explained below.

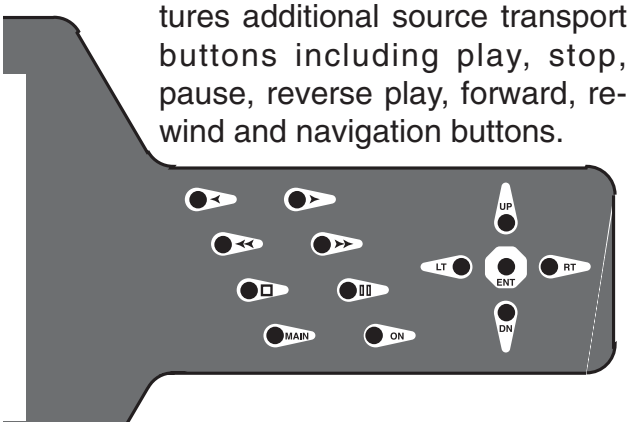
There are LCD adjustment buttons above the display.



To the left of the color LCD display are numeric source transport buttons including * and Enter. There is also the black Master Power switch located to the far left of the bezel.



The right side of the display features additional source transport buttons including play, stop, pause, reverse play, forward, rewind and navigation buttons.



The Master Power switch needs to be pushed in for the HTR-2400 to operate. When servicing the system, it is wise to turn this button off. Turning the button off is similar to unplugging the HTR-2400.

XM Radio Tuner Operation (Also on keypads)
0-9 & ENTER - Access XM channel numbers.
* - Updates the current channel & song info.
<< & >> - Advances channels down & up.
< & > - Advances through XM genres.
|| & [] - Advances through channels in a genre.
MAIN - Advances through presets (preset skip up).
Up & Down - Preset skips up and down.

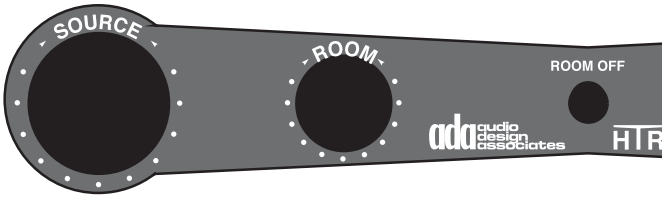
Storing An XM Station As A Preset
When on a station that you wish to store as a preset, press 0 twice and then press ENTER. You will be prompted to "STORE? PR #". If this preset number is right, press ENTER to store this as one of the 30 possible presets.

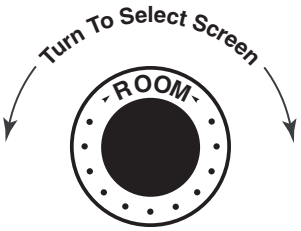
If you wish to store this station on a different preset number, use < or > to cycle through other presets and then press ENTER when you are ready to store the station as a preset. A * appearing next to the preset number indicates that the preset is already being used. If you press ENTER while on a preset number with a * next to it, then the new station will override the previous one.

FM/AM/WX Tuner Operation (Also on keypads)
0-9, * & ENTER - Access presets (1-30) or direct tunes stations by frequency (1027 or 102*7 enters 102.7).
<< & >> - Tunes down & up.
< & > - Seeks down & up.
[] - Switches between stereo & mono modes (FM only).
|| - Switches between radio bands (FM>WX>AM>FM).
MAIN - Advances through presets (preset skip).
Up & Down - Preset skips up and down.

Storing An XM Station As A Preset
When on a station that you wish to store as a preset, press 0 twice and then press ENTER. You will be prompted to "STORE? PR #". If this preset number is right, press ENTER. If you wish to store this station on a different preset number, use < or > to cycle through other presets and then press ENTER. A * appearing next to the preset number indicates that the preset is already being used. If you press ENTER while on a preset number with a * next to it, then the new station will override the previous one. You will then have the option to label (4 characters) the station (i.e. NEWS, ROCK, WABC, etc). To skip this just hit ENTER again. Or use the < & > buttons to change characters along with the << & >> buttons to move the flashing character position. When done hit ENTER.

SELECTING ROOM SCREENS





The **Theater Zone screen** details the activity of the HTR-2400 digital home theater preamplifier. Turning the Source knob will scroll through inputs and pressing the Source knob will engage the selection. The Mode knob works in the same manner and the Volume knob raises or lowers the Theater's volume. The other features can be accessed by pressing the Volume knob. A flashing * (cursor) will appear next to the first feature and turning the Volume knob will adjust that feature. To exit this setup, press the Volume knob repeatedly, wait 30 seconds for the feature to time out, or turn the Room knob. Pressing the Off button will turn off the Theater Zone.

The **All Rooms screen** details the status of all nine rooms including the Theater Zone. Here, pressing the Room knob will advance the * (cursor) through all rooms. Turning the Source knob will cycle through inputs and pressing the Source knob will engage the selected source.

For each zone there is an individual **Room screen** showing that room's status. Turning the Source knob will scroll through inputs and pressing the Source knob will engage the selection. Turning the Volume knob will adjust volume. Just like the Theater Zone, pressing and then turning of the Volume knob allows you to adjust the other features. To turn off a room, press the Off button. To turn off all rooms (not including the Theater), press and hold the Off button.

The Party Group screen lets you turn on several rooms to the same source. Please note, making rooms track one or more of the four Party Groups is a feature that your installer must setup. A * will appear next to rooms assigned to the Party group. Pressing the Room knob advances through the four Party Groups. Turning and then pressing the Source knob, engages the selected input.

The HTR-2400 features eleven screens which can be cycled through by turning the Room knob.

```
THEATER ZONE    VOL -41.5 DB

 DVD PLAYER 7

 PLIIx MOVIE

 BASS + 2.5DB   TONE RECALL 1
 TREB + 3.0DB   BAL  RECALL 1
 IN    2.0.0.0  VOL  RECALL 1
 OUT   3.2.1.2  D NRM    0 DB
       JAN  1   12:01 AM
```

```
*THEATER ZONE   THEATER OFF

 ROOM 1          ROOM OFF
 ROOM 2          ROOM OFF
 ROOM 3          ROOM OFF
 ROOM 4          ROOM OFF
 ROOM 5          ROOM OFF
 ROOM 6          ROOM OFF
 ROOM 7          ROOM OFF
 ROOM 8          ROOM OFF
     JAN  1      12:01 AM
```

```
 ROOM 1          VOLUME 36

 TUNER 2          95.5    FM

 BASS + 6        BALANCE EQUAL
 MID  + 4        LOUDNESS ON
 TREB + 7        LIMITER  ON
 TONE 1

       JAN  1    12:01 AM
```

```
 PARTYGROUP 1     XM TUNER 1


*ROOM  1          ROOM  5
*ROOM  2          ROOM  6
*ROOM  3         *ROOM  7
 ROOM  4          ROOM  8

       JAN  1    12:01 AM
```

THEATER ZONE SCREEN

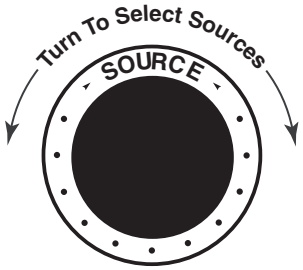
To access the Theater Zone page, turn the Room knob until the display to the right appears. Once on the Theater Zone page, you can see the status of the theater as well as adjust the following:

1 Select a Source (input).
2 Change Modes.
3 Adjust Volume.
4 Turn the Theater off.
5 Raise or lower Bass levels.
6 Raise or lower Treble levels.
7 Recall a Tone Preset.
8 Recall a Balance Preset.
9 Recall a Volume Preset.

```
THEATER ZONE    VOL -41.5 DB

 DVD PLAYER 7

 PLIIx MOVIE

 BASS  + 2.5DB   TONE RECALL 1
 TREB  + 3.0DB   BAL  RECALL 1
 IN     2.0.0.0  VOL  RECALL 1
 OUT    3.2.1.2  D NRM    0 DB
        JAN  1   12:01 AM
```

Selecting A Source (Turning Theater On)

If the Theater is off, selecting an input will turn it on. To select an input, turn the Source knob. The HTR-2400 permits you scroll through the source components connected to your system without immediately switching away from what you are already using. The source names that you could select appear in the area marked "B" while the current status of the room is shown in the area marked as "A".

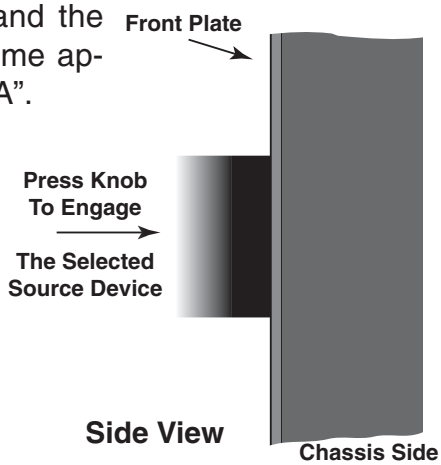



```
THEATER ZONE    VOL -41.5 DB
A                            B
 DVD PLAYER 7    XM TUNER 1

 PLIIx MOVIE
```

```
THEATER ZONE    VOL -41.5 DB
A                            B
 DVD PLAYER 7    FM TUNER 2

 PLIIx MOVIE
```

```
THEATER ZONE    VOL -41.5 DB
A                            B
 DVD PLAYER 7    CD PLAYER 3

 PLIIx MOVIE

 BASS  + 2.5DB   TONE RECALL 1
 TREB  + 3.0DB   BAL  RECALL 1
 IN     2.0.0.0  VOL  RECALL 1
 OUT    3.2.1.2  D NRM    0 DB
        JAN  1   12:01 AM
```

To engage the selected source (displayed in area "B"), press the Source knob. The HTR-2400 will switch inputs and the new source name appears in area "A".

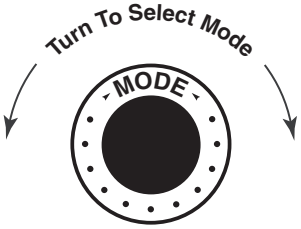


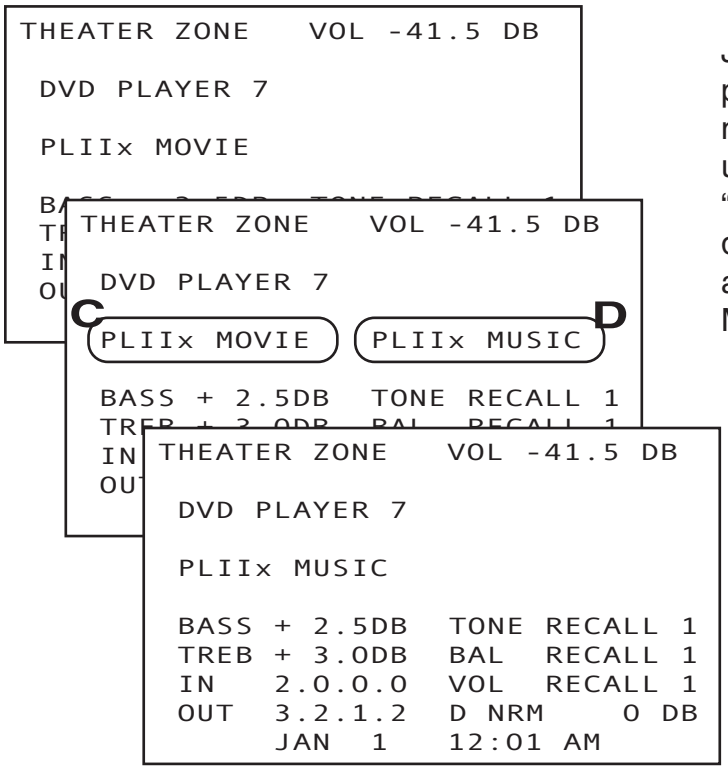

```
THEATER ZONE    VOL -41.5 DB

 CD PLAYER 3

 QUAD BYPASS

 BASS  + 2.5DB   TONE RECALL 1
 TREB  + 3.0DB   BAL  RECALL 1
 IN     2.0.0.0  VOL  RECALL 1
 OUT    3.2.1.2  D NRM    0 DB
        JAN  1   12:01 AM
```

Note that your source names may differ from what is shown here. Also, the number following the source name refers to the order of the inputs and not the number of say CD players in the system.

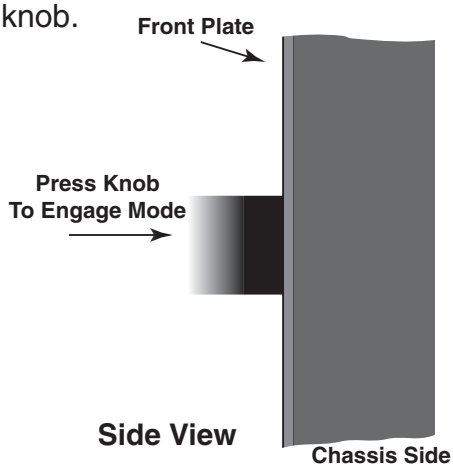
Selecting Modes

The HTR-2400 features over 50 modes for film, TV, and music. Your installer may have also setup Default modes for you, which engage automatically when a source is selected. If you wish to select a different mode, turn the Mode knob.





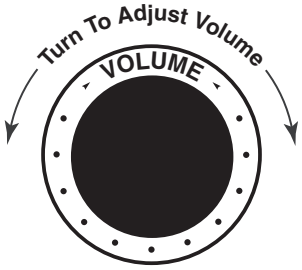
Just like source selection, the HTR-2400 permits you scroll through the available modes without actually making the change until the desired mode is displayed in area "D". The current mode will remain on the display in area "C" until the switch is enacted. To change the mode, press the Mode knob.



Note, because the HTR-2400's DSP (digital signal processor - the home theater's brain) is "auto-sensing", it will only display modes that can be used. For example, when playing back a 5.1 channel encoded DVD, only "Cinema Modes" will appear as you turn the Mode knob. When playing back a normal CD in the DVD player, only "2 Channel" modes will appear.

Adjusting Volume

The volume in the Theater Zone can be raised or lowered using the Volume knob.



Muting Volume

To mute the volume in the Theater Zone, press the Off button. To unmute, press the Off button again or give the Volume knob a slight turn.

Turning the Theater Zone Off

Press and hold the Off button to turn the Theater Zone off. Please note, that this will not perform an All Off function for the other eight rooms on the system. The Theater Zone operates independently from the rest of the home with respect to all off.

THEATER ZONE SCREEN (cont.)

To access the Theater Zone's other features including:

Raise or lower Bass levels.
Raise or lower Treble levels.
Recall a Tone Preset.
Recall a Balance Preset.
Recall a Volume Preset.

press the Volume knob.

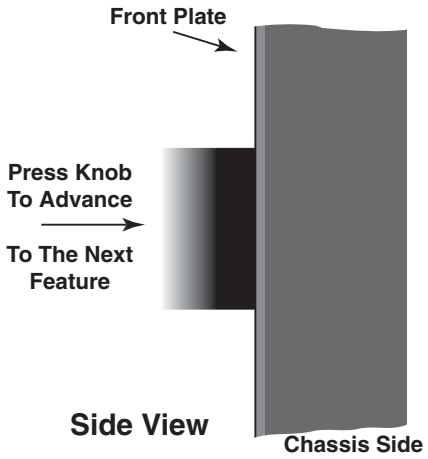
A * (cursor) will begin flashing on the first feature, BASS.

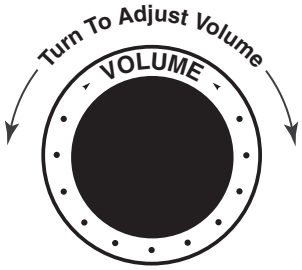
```
THEATER ZONE    VOL -41.5 DB

 DVD PLAYER 7

 PLIIx MOVIE

*BASS + 3.0DB   TONE RECALL 1
 TREB + 3.0DB   BAL  RECALL 1
 IN    2.0.0.0  VOL  RECALL 1
```

```
THEATER ZONE    VOL -41.5 DB

 DVD PLAYER 7

 PLIIx MOVIE

*BASS + 3.5DB   TONE RECALL 1
 TREB + 3.0DB   BAL  RECALL 1
 IN    2.0.0.0  VOL  RECALL 1
```

```
THEATER ZONE    VOL -41.5 DB

 DVD PLAYER 7

 PLIIx MOVIE

*BASS + 4.0DB   TONE RECALL 1
 TREB + 3.0DB   BAL  RECALL 1
 IN    2.0.0.0  VOL  RECALL 1
 OUT   3.2.1.2  D NRM    0 DB
       JAN  1   12:01 AM
```

```
THEATER ZONE    VOL -41.5 DB

 DVD PLAYER 7

 PLIIx MOVIE

 BASS + 4.0DB   TONE RECALL 1
*TREB + 3.0DB   BAL  RECALL 1
 IN    2.0.0.0  VOL  RECALL 1
 OUT   3.2.1.2  D NRM    0 DB
       JAN  1   12:01 AM
```





The HTR-2400's out of the box settings have all speakers not including the subwoofer operate with these bass and treble control options. However, your custom installer may have modified your systems operation such that these features do operate in this manner. ADA recommends consulting with your custom install professional to determine if these features should be used.

Bass Adjustment
While the * (cursor) is on BASS, turning the Volume knob will raise or lower the bass level.

To advance to the next feature, press the Volume knob.

Treble Adjustment
While the * (cursor) is on TREB, turning the Volume knob will raise or lower the treble level.

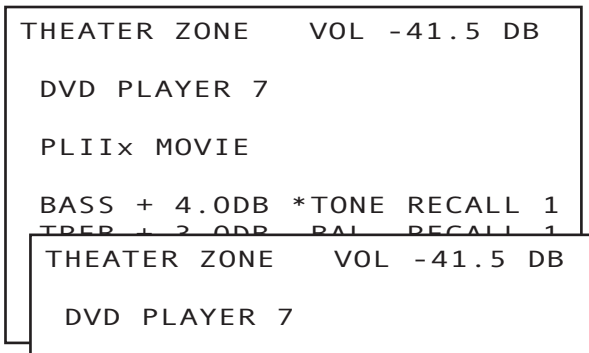
To advance to the next feature, press the Volume knob.

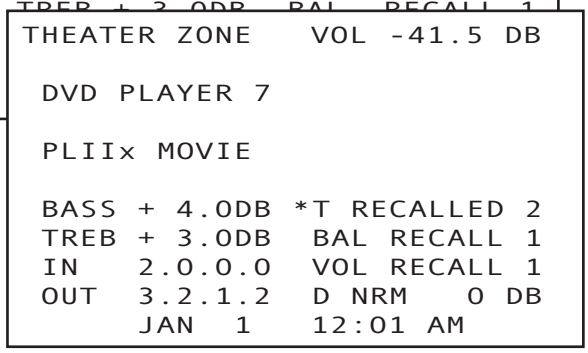
Recalling a Preset

The HTR-2400 features three types of presets (Tones, Balance, and Volume). Each type of preset has four options numbered accordingly. For you to be able to recall a preset, it must first be created. ADA recommends contacting your installation professional to see if presets are programmed into your system.

Tone Presets

The Theater Zone has four Tone Presets. This is actually a complex feature set of the HTR-2400. Tone Presets permit the installer to create two groups of speakers (A and B). Each grouping can have an independent bass frequency point, bass level, treble frequency point, and treble level. These features are used for room equalization.

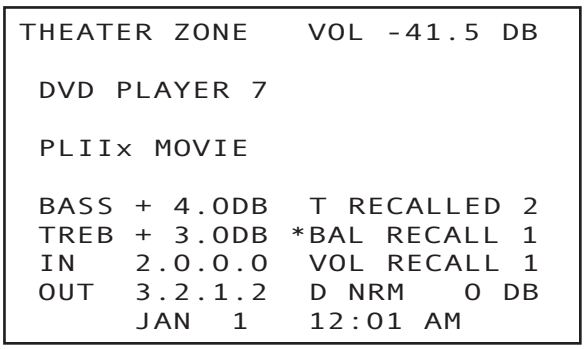



THEATER ZONE VOL -41.5 DB
DVD PLAYER 7
PLIIx MOVIE
BASS + 4.0DB *T RECALLED 2
TREB + 3.0DB BAL RECALL 1
IN 2.0.0.0 VOL RECALL 1
OUT 3.2.1.2 D NRM 0 DB
JAN 1 12:01 AM

To recall a Tone Preset, press the Volume knob so that the flashing * (cursor) is on TONE RECALL #. Turning the Volume knob will allow you to select one of the four Tone Presets. Preset recall is immediate and will occur a second after the tone preset number is displayed.

Balance Presets

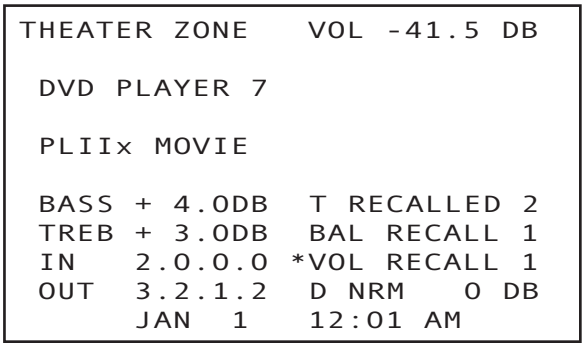
Balance presets contain both levels and delay settings of all speakers in your theater. This permits your installer to optimize the sound in the theater for multiple seating positions (hot spots). Please note, that in order for this feature to work, you must have stored Balance Presets.


THEATER ZONE VOL -41.5 DB
DVD PLAYER 7
PLIIx MOVIE
BASS + 4.0DB T RECALLED 2
TREB + 3.0DB *BAL RECALL 1
IN 2.0.0.0 VOL RECALL 1
OUT 3.2.1.2 D NRM 0 DB
JAN 1 12:01 AM

To recall a Balance Preset, press the Volume knob so that the flashing * (cursor) is on BAL RECALL #. Then turn the Volume knob until the desired preset number is displayed. Preset recall is immediate and will occur a second after the balance preset number is displayed.

Volume Presets

Volume presets contain the master volume level of the theater. Your custom installation professional will have had to store these presets if you wish to use this feature as intended. There are four Volume Presets permitting you to perhaps set up a low, medium, high and super demo level.


THEATER ZONE VOL -41.5 DB
DVD PLAYER 7
PLIIx MOVIE
BASS + 4.0DB T RECALLED 2
TREB + 3.0DB BAL RECALL 1
IN 2.0.0.0 *VOL RECALL 1
OUT 3.2.1.2 D NRM 0 DB
JAN 1 12:01 AM

To recall a preset, press the Volume knob until the * is flashing on VOL RECALL. Then turn the Volume knob to select the preset number. Preset recall is immediate and will occur a second after the balance preset number is displayed.

Exiting (regain use of the Volume knob)

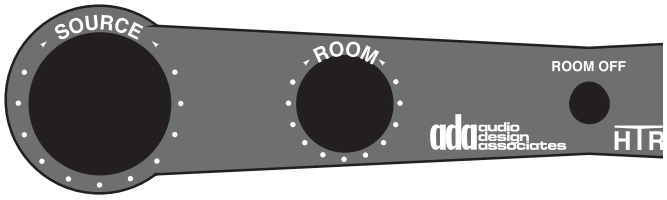
To exit this feature:

a Press the Volume knob repeatedly until the * has scrolled through TREB, TONE RECALL, BAL RECALL and VOL RECALL or...

b Turn the Room knob to change screens or...

c Let the screen time out (30 seconds).

ALL ROOMS SCREEN



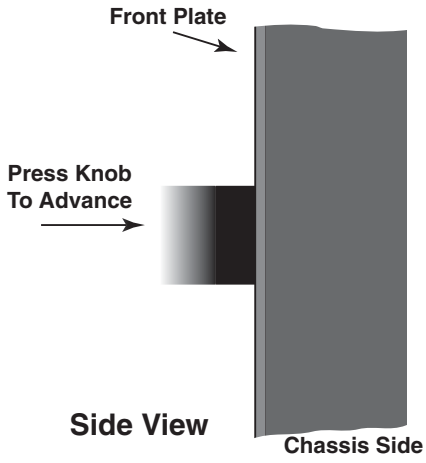
To access the All Rooms page, turn the Room knob until the display to the right appears. Please note, that since the HTR-2400 can have the room names customized, your display may read slightly different.

```
*THEATER ZONE   THEATER OFF

 ROOM 1          ROOM OFF
 ROOM 2          ROOM OFF
 ROOM 3          ROOM OFF
 ROOM 4          ROOM OFF
 ROOM 5          ROOM OFF
 ROOM 6          ROOM OFF
 ROOM 7          ROOM OFF
 ROOM 8          ROOM OFF
     JAN  1     12:01 AM
```

Once on the All Rooms page, you can see what rooms/zones are off as well as rooms that are on and what source is playing to it.

On this page you can:

1. Select a room.
2. Select a source to the room.
3. Turn the room off.
4. Adjust room volume (the display will not indicate volume levels).



To select a room you wish to control, repeatedly press the Room knob. The * (cursor) will advance downward to the next room with each press of the Room knob.

```
*THEATER ZONE   THEATER OFF

 ROOM 1          ROOM OFF
 ROOM 2          ROOM OFF
 ROOM 3          ROOM OFF
 ROOM 4          ROOM OFF
 ROOM 5          ROOM OFF
 ROOM 6          ROOM OFF
 ROOM 7          ROOM OFF
 ROOM 8          ROOM OFF
     JAN  1     12:01 AM
```

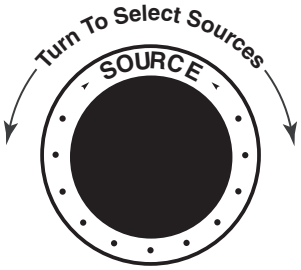
```
 THEATER ZONE   THEATER OFF

*ROOM 1          ROOM OFF
 ROOM 2          ROOM OFF
 ROOM 3          ROOM OFF
 ROOM 4          ROOM OFF
 ROOM 5          ROOM OFF
 ROOM 6          ROOM OFF
 ROOM 7          ROOM OFF
 ROOM 8          ROOM OFF
     JAN  1     12:01 AM
```

When you reach the last room, the next press of the Room button will advance the * (cursor) to the Theater Zone (top line).

```
 THEATER ZONE   THEATER OFF

 ROOM 1          ROOM OFF
*ROOM 2          ROOM OFF
 ROOM 3          ROOM OFF
 ROOM 4          ROOM OFF
 ROOM 5          ROOM OFF
 ROOM 6          ROOM OFF
 ROOM 7          ROOM OFF
 ROOM 8          ROOM OFF
     JAN  1     12:01 AM
```

If you turn the Room knob, the display will advance to other screens. When you return to the All Rooms page, the * (cursor) will appear next to the last selected room name.

```
 THEATER ZONE   THEATER OFF

 ROOM 1          ROOM OFF
 ROOM 2          ROOM OFF
*ROOM 3          ROOM OFF
 ROOM 4          ROOM OFF
 ROOM 5          ROOM OFF
 ROOM 6          ROOM OFF
 ROOM 7          ROOM OFF
 ROOM 8          ROOM OFF
     JAN  1     12:01 AM
```

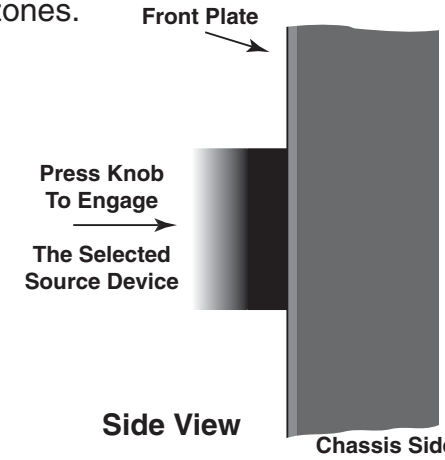



```
*THEATER ZONE   THEATER OFF

 ROOM 1           ROOM OFF
 ROOM 2           ROOM OFF
 ROOM 3           ROOM OFF
 ROOM 4
 ROOM 5
 ROOM 6
 ROOM 7
 ROOM 8
      JAN
```

```
*THEATER ZONE >DVD PLAYER 1

 ROOM 1           ROOM OFF
 ROOM 2           ROOM OFF
 ROOM 3           ROOM OFF
 ROOM 4
 ROOM 5
 ROOM 6
 ROOM 7
 ROOM 8
      JAN
```

```
*THEATER ZONE >DSS          2

 ROOM 1           ROOM OFF
 ROOM 2           ROOM OFF
 ROOM 3           ROOM OFF
 ROOM 4           ROOM OFF
 ROOM 5           ROOM OFF
 ROOM 6           ROOM OFF
 ROOM 7           ROOM OFF
 ROOM 8           ROOM OFF
      JAN   1     12:01 AM
```

While the * (cursor) is set to the Theater Zone, turning the Source knob will scroll through only the sources available in the home theater. Please note, these may differ from the sources accessible in the other rooms/zones.



Once the desired source is displayed, pressing of the Source knob will engage that component. If the theater was off, this function will also turn the Theater on.

```
*THEATER ZONE   DSS          2

 ROOM 1           ROOM OFF
 ROOM 2           ROOM OFF
 ROOM 3           ROOM OFF
 ROOM 4           ROOM OFF
 ROOM 5           ROOM OFF
 ROOM 6           ROOM OFF
 ROOM 7           ROOM OFF
 ROOM 8           ROOM OFF
      JAN   1     12:01 AM
```

To select sources for additional rooms, press the Room knob to advance the * (cursor) to the desired room. Then, using the Source knob, dial in the desired source component. Once it is displayed, press the Source knob to engage the selection. Please note, that sources used in the eight house-wide rooms, may differ from the sources available in the Theater Zone.

```
 THEATER ZONE   DVD PLAYER

*ROOM 1          >TUNER 1
 ROOM 2           ROOM OFF
 ROOM 3
 ROOM 4
 ROOM 5
 ROOM 6
 ROOM 7
 ROOM 8
      JAN
```

```
 THEATER ZONE   DVD PLAYER

*ROOM 1          >TUNER 2
 ROOM 2           ROOM OFF
```

```
 THEATER ZONE   DVD PLAYER

*ROOM 1           TUNER 2
 ROOM 2           ROOM OFF
 ROOM 3           ROOM OFF
 ROOM 4           ROOM OFF
 ROOM 5           ROOM OFF
 ROOM 6           ROOM OFF
 ROOM 7           ROOM OFF
 ROOM 8           ROOM OFF
      JAN   1     12:01 AM
```

To turn off a room, press the Room knob so that the * (cursor) is next to the room name or number. Then press the Off button situated between the knobs. To turn off all rooms, press and hold the Off button. The Theater Zone needs to be turned off seperately.

ROOM SCREEN (1-8)

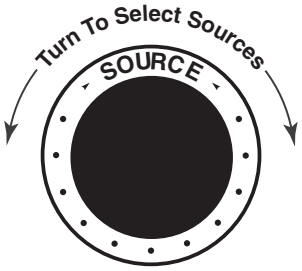
To access a Room's page, turn the Room knob until the display to the right appears with the room number or name that you wish to control. Once on a Room's page, you can see the room's status as well as control:

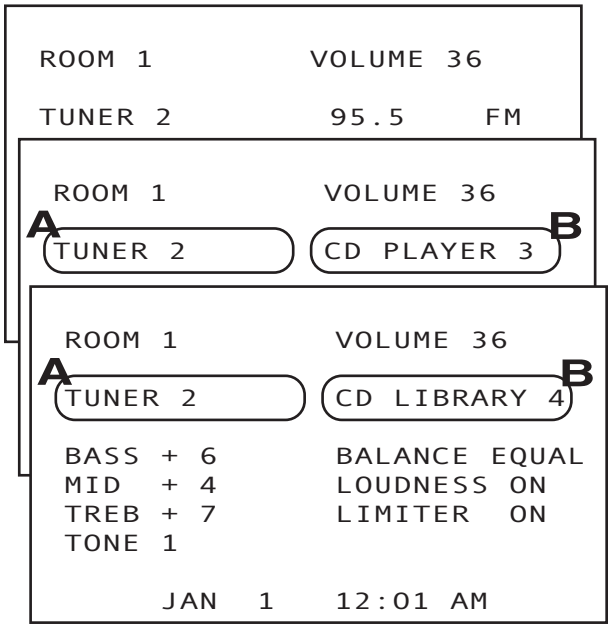
1 Select a Source.
2 Adjust Volume.
3 Turn the room off.
4 Turn all rooms off (except Theater).
5 Adjust Bass Levels.
6 Adjust Midrange Levels.
7 Adjust Treble Levels.
8 Adjust Balance Levels.
9 Turn the Loudness Filter On & Off.
10 Turn the Limiter On & Off.

```
ROOM 1          VOLUME 36

TUNER 2          95.5    FM

BASS + 6        BALANCE EQUAL
MID  + 4        LOUDNESS ON
TREB + 7        LIMITER  ON
TONE 1

      JAN  1    12:01 AM
```

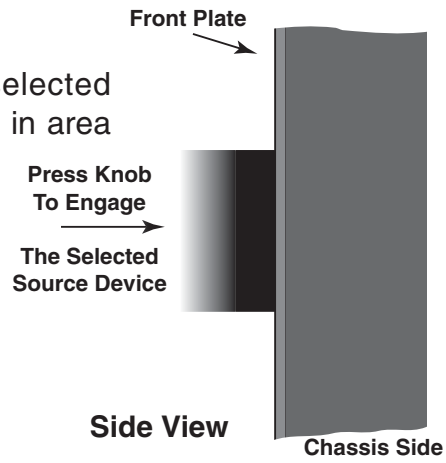
Selecting A Source (Turning On A Room)

If the room is off, selecting an input will turn it on. To select an input, turn the Source knob. The HTR-2400 permits you scroll through the source components connected to your system without immediately switching away from what you are already using. The source names that you could select appear in the area marked "B" while the current status of the room is shown in the area marked as "A".





To engage the selected source (displayed in area "B"), press the Source knob. The HTR-2400 will switch inputs and the new source name appears in area "A".

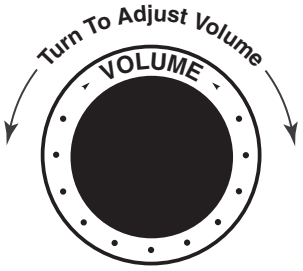



```
ROOM 1          VOLUME 36

CD LIBRARY 4

BASS + 6        BALANCE EQUAL
MID  + 4        LOUDNESS ON
TREB + 7        LIMITER  ON
TONE 1

      JAN  1    12:01 AM
```

Note that your source names may differ from what is shown here. Also, the number following the source name refers to the order of the inputs and not the number of say CD players in the system.

Adjusting Volume

The volume can be raised or lowered using the Volume knob.



Turning Off A Room or All Rooms

You can quickly turn off a room by simply pressing the Room Off button. If other rooms are on (other than the Theater Zone), the display will read ROOM OFF. To turn off all rooms (other than the Theater Zone), press and hold the Room Off button.

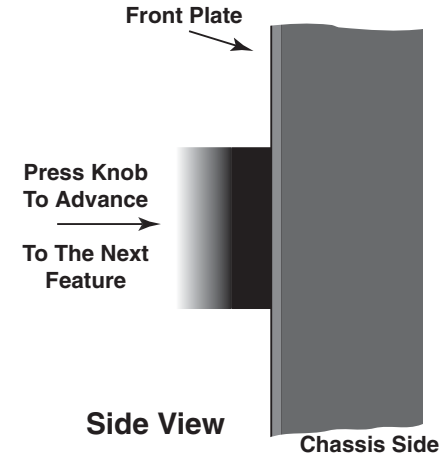
```
ROOM 1          VOLUME 36

*ROOM OFF
```

```
ROOM 1          VOLUME 36

ALL OFF

BASS + 6        BALANCE EQUAL
MID  + 4        LOUDNESS ON
TREB + 7        LIMITER  ON
TONE 1

      JAN  1    12:01 AM
```

The Theater Zone must be turned off seperately and does not turn off with the multi-room's All Off command.

Adjusting Bass, Midrange & Treble

To access the controls for bass, midrange, treble, tone preset recalls, balance control, loudness filter and limiter, press the Volume knob.

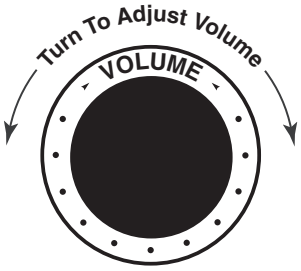



```
ROOM 1          VOLUME 36

TUNER 2          95.5    FM

*BASS + 6       BALANCE EQUAL
 MID  + 4       LOUDNESS ON
 TREB + 7       LIMITER  ON
 TONE 1
```

```
ROOM 1          VOLUME 36

TUNER 2          95.5    FM

 BASS + 6       BALANCE EQUAL
*MID  + 4       LOUDNESS ON
 TREB + 7       LIMITER  ON
 TONE 1
```

```
ROOM 1          VOLUME 36

TUNER 2          95.5    FM

 BASS + 6       BALANCE EQUAL
 MID  + 4       LOUDNESS ON
*TREB + 7       LIMITER  ON
 TONE 1

      JAN  1    12:01 AM
```

A * (cursor) will begin flashing next to the first feature, BASS. Use the Volume knob to raise or lower bass levels.



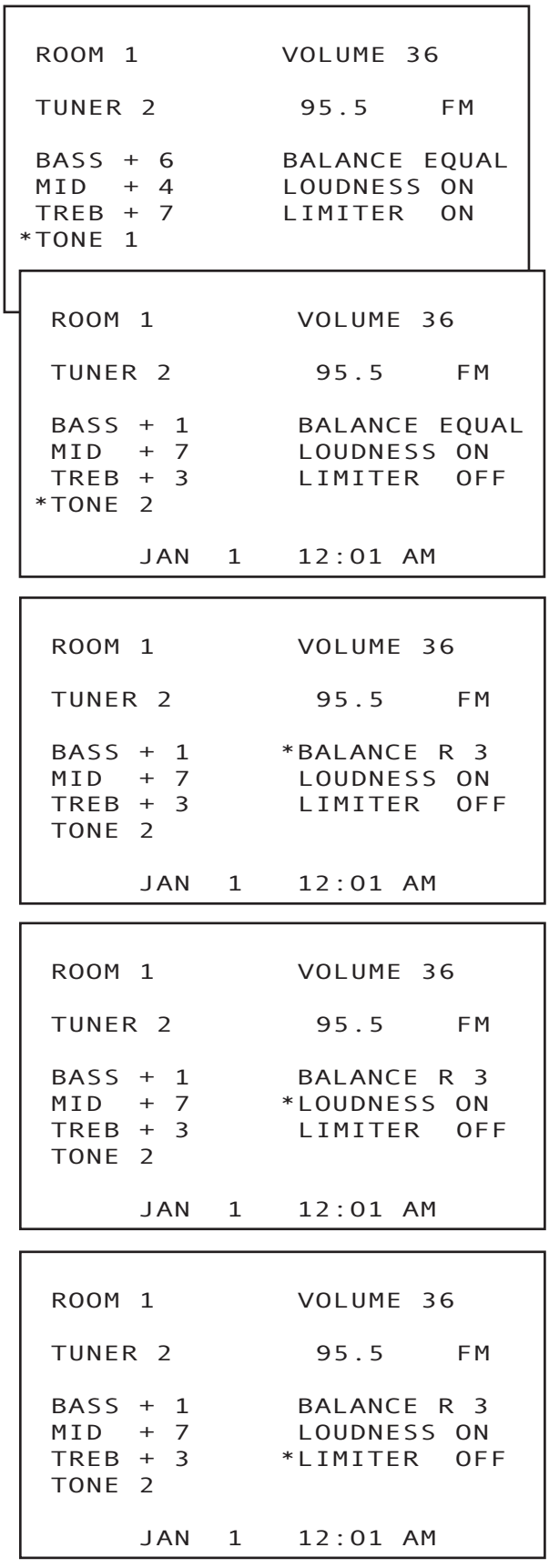
To advance to the next feature, press the Volume knob. The * (cursor) will indicate the next feature. Again, use the Volume knob to adjust this feature.

ROOM SCREEN (CONT.)

Tone Preset Recall
The HTR-2400 features four tone presets per room. These presets store tone levels and Loudness & Limiter filter settings and can be recalled along with a fifth preset, Flat. If Flat is selected, all levels (other than Balance) are set to 0 and the Loudness Filter and Limiter are turned off.

In order for Presets 1 through 4 to operate, your custom installation professional will have needed to program the presets.

To recall a Tone Preset, press the Volume Knob until the flashing * is on TONE. Turn the Volume knob to the desired preset number (1-4) or the letter “F” (for Flat). The recalling of the preset is immediate and no other action is required.


ROOM 1 VOLUME 36
TUNER 2 95.5 FM
BASS + 6 BALANCE EQUAL
MID + 4 LOUDNESS ON
TREB + 7 LIMITER ON
*TONE 1
ROOM 1 VOLUME 36
TUNER 2 95.5 FM
BASS + 1 BALANCE EQUAL
MID + 7 LOUDNESS ON
TREB + 3 LIMITER OFF
*TONE 2
JAN 1 12:01 AM
ROOM 1 VOLUME 36
TUNER 2 95.5 FM
BASS + 1 *BALANCE R 3
MID + 7 LOUDNESS ON
TREB + 3 LIMITER OFF
TONE 2
JAN 1 12:01 AM
ROOM 1 VOLUME 36
TUNER 2 95.5 FM
BASS + 1 BALANCE R 3
MID + 7 *LOUDNESS ON
TREB + 3 LIMITER OFF
TONE 2
JAN 1 12:01 AM
ROOM 1 VOLUME 36
TUNER 2 95.5 FM
BASS + 1 BALANCE R 3
MID + 7 LOUDNESS ON
TREB + 3 *LIMITER OFF
TONE 2
JAN 1 12:01 AM

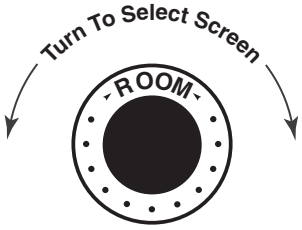
Balance Adjustment
Balance allows you to compensate speaker levels to either the right or left speaker(s). To adjust balance, press the Volume knob so that the * is on BALANCE. Then turn the Volume knob to move the balance level to the left or to the right.

Loudness Contour Filter (On or Off)
Loudness contour is an active filter that enhances bass levels particularly at low volume levels. As the rooms volume is increased the effect of this filter is minimized. This permits the HTR-2400 to sound great even at background listening levels. To turn Loudness on or off, press the Volume knob so that the * is on LOUDNESS and turn the Volume knob.

Limiter
The HTR-2400 features a digital limiter which prevents clipping. To turn this feature on or off, press the Volume knob until the * is on LIMITER and then turn the Volume knob to turn this feature on or off.

Exiting (regain use of the Volume knob)
a Press the Volume knob repeatedly until the * has scrolled through all features or...
b Turn the Room knob to change screens or...
c Let the screen time out (30 seconds).

PARTY GROUP SCREEN



To access Party Group control, turn the room knob until the screen shows the Party Group page.

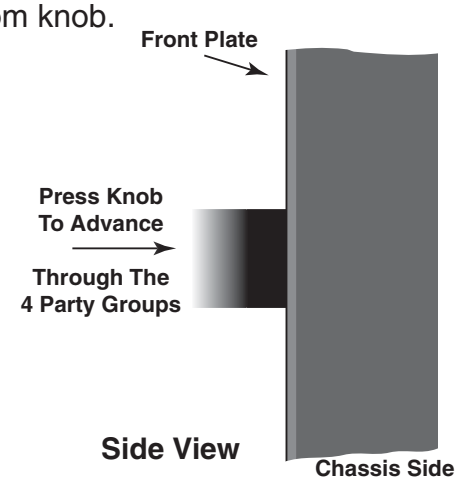
```
 PARTYGROUP 1     XM TUNER 1


*ROOM   1          ROOM   5
*ROOM   2          ROOM   6
*ROOM   3         *ROOM   7
 ROOM   4          ROOM   8
```

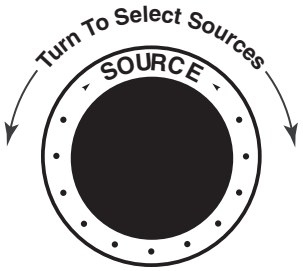
```
 PARTYGROUP 2     XM TUNER 1


*ROOM   1         *ROOM   5
 ROOM   2         *ROOM   6
 ROOM   3         *ROOM   7
*ROOM   4          ROOM   8
```

```
 PARTYGROUP 3     XM TUNER 1


ROOM   1          *ROOM   5
ROOM   2          *ROOM   6
ROOM   3           ROOM   7
ROOM   4          *ROOM   8
```

```
 PARTYGROUP 4     XM TUNER 1


*ROOM   1          *ROOM   5
*ROOM   2          *ROOM   6
*ROOM   3          *ROOM   7
*ROOM   4          *ROOM   8

       JAN   1    12:01 AM
```

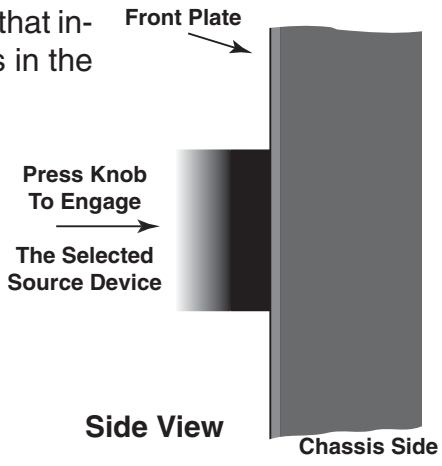
In order for this feature to operate, your installation professional must have already assigned rooms to one (or more) of the four available Party Groups. A * will appear next to rooms that are assigned to the Party Group. To advance through all four Party Groups, repeatedly press the Room knob.





To select a source for a Party Group, turn the Source knob until the desired component is displayed.

Then press the Source knob to engage that input to the rooms in the Party Group.




```
 PARTYGROUP 4   > FM TUNER 2
```

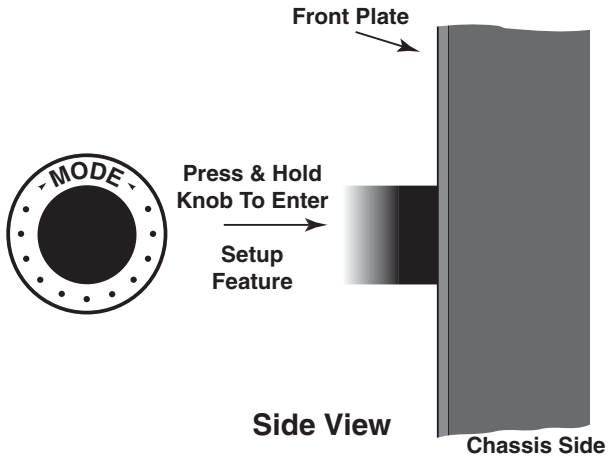
```
 PARTYGROUP 4   > CD PLAYER 3
```

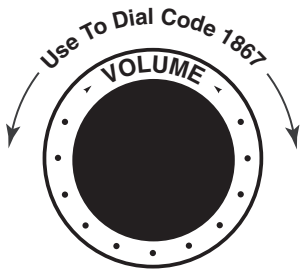
```
 PARTYGROUP 4     CD PLAYER 3


*ROOM   1          *ROOM   5
*ROOM   2          *ROOM   6
*ROOM   3          *ROOM   7
*ROOM   4          *ROOM   8

       JAN   1    12:01 AM
```

ENTERING SETUP MODE

The code to enter the HTR-2400's setup menu is 1867. To enter the setup section of the HTR-2400, press and hold the Mode knob for 5 seconds until the display reads:

```
SETUP                    M

              |
      ENTER CODE XXXX

      BUTTON/ENCODER TEST
```

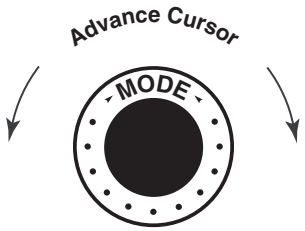




Turn the Volume knob until the first X is replaced by the number 1 in the code 1867.

```
SETUP                    M

              |
      ENTER CODE 1XXX

      BUTTON/ENCODER TEST
```

Turn the Mode knob to advance the cursor to the next position. Again use the Volume knob to dial in the number 8. Repeat this until the code 1867 is displayed.




```
SETUP                    M

              |
      ENTER CODE 18XX

      BUTTON/ENCODER TEST
```

```
SETUP                    M

              |
      ENTER CODE 186X
```

```
SETUP                    M

              |
      ENTER CODE 1867

      BUTTON/ENCODER TEST
```

When the code 1867 is displayed, press and release the Mode knob.

```
MAIN SETUP MENU          M

> HOME THEATER
  PARTY          TONE
  INPUT TRIMS    LABELS/SOURCE
  ADA BUS        AC POWER
  VOLUME         VERSION
  BALANCE        CLOCK SET

                 FACTORY DEFAULT
```

Navigating Setup Mode

The HTR-2400's on-screen menu system is very easy to navigate. Most features are accessed by turn the Mode knob and entered by pressing the knob. The Volume knob and occasionally, the Room knob are used to access other features. Once you have begun working with the HTR-2400's setup, the function of turning and pressing the appropriate knobs will become self evident.

An arrow will display next to the feature you are on.

To exit the setup area from any page, move the arrow to the letter "M" using the Mode knob. Then press the Mode knob.

If you wish to return to a previous Setup page, move the arrow to the letter "P" and press the Mode knob.

```
MAIN SETUP MENU          M

> HOME THEATER
```

```
MAIN SETUP MENU          M>
```

```
HT MAIN SETUP MENU    <P M

 HT SPEAKER
 HT SOURCE
 HT GLOBAL
 HT TONE
 HT PROLOGIC IIx
 HT INFORMATION
```

Multi-Room & Global Setups

The Main Setup Menu provides you with eight pages in addition to the Home Theater setup menus. Other than a few ADA Bus features, the Version page and the Clock page, the options discussed here only apply to the eight house-wide rooms and not the Home Theater. The Home Theater is setup on its own series of pages. This page also permits you to reset the HTR-2400 to the ADA Factory Defaults.

```
MAIN SETUP MENU          M

  HOME THEATER
>PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
 ADA BUS        AC POWER
 VOLUME         VERSION
 BALANCE        CLOCK SET

              FACTORY DEFAULT
```

Party - Assign rooms to up to four Party Groups. Party Groups can be used to force zones to track each other's sources or to make turning on several rooms easy when entertaining.

Input Trims - Raise or lower the source's audio level so that as inputs are switched, the levels are similar.

ADA Bus - Set the maximum number of rooms and inputs on the house-wide system. You can also turn the HTR-2400's front panel IR receiver on or off as well as set time outs for the GUI and display (including all LEDs).

Volume - Set a room's maximum volume level, store up to four volume presets and determine if the room turns on to Volume, Tone & Balance Presets 1 or what was last used.

Balance - Set balance levels and presets.

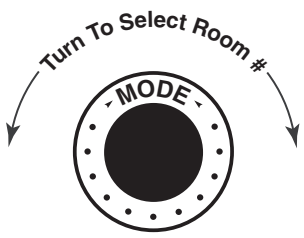
Tone - Set tone levels, filters and presets.

AC Power - Assign AC outlets to sources.

Version - Display HTR-2400 version #s.

Clock - Set the clock & time format.

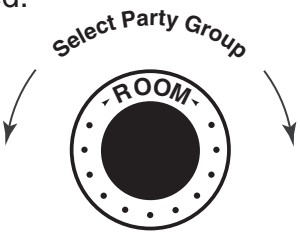
PARTY MODE SETUP



Party Mode permits you to have rooms track a specific Party Group number. Use the Mode knob to advance through room numbers/ names. The arrow will point to the room selected.

```
MAIN SETUP MENU          M

  HOME THEATER
>PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
 ADA BUS        AC POWER
 VOLUME         VERSION
 BALANCE        CLOCK SET

                FACTORY DEFAULT
```

```
PARTY SETUP                P M
                           |
                PARTY 1 2 3 4
 ROOM 1                 *   *
 ROOM 2                 *
 ROOM 3
>ROOM 4                 *  *
 ROOM 5
 ROOM 6
 ROOM 7
 ROOM 8
```



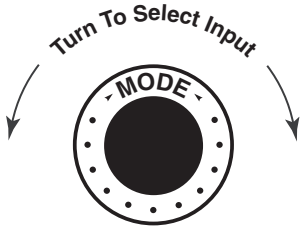
The Room knob is used to select the Party Group you wish to edit. Turning the room knob will advance the arrow over the Party Group number.

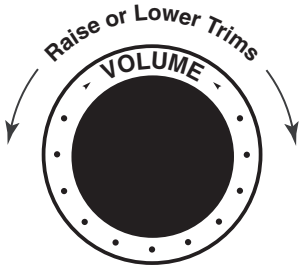
```
PARTY SETUP                P M
                           |
                PARTY 1 2 3 4
 ROOM 1                 *   *
 ROOM 2                 *
 ROOM 3
 ROOM 4                 * *
 ROOM 5
>ROOM 6                   *
 ROOM 7
 ROOM 8
```

The Volume knob is used to make a room part of a Party Group. Rotating it clockwise turns Party On. A * (star) indicates that Party is On. Turning it counter-clockwise turns Party Off.

INPUT TRIM SETUP

The adjustment of Input Trim levels is a feature that helps maintain even volume levels when switching between sources. The Mode knob advances through Source Names. The arrow will indicate which source you are on.





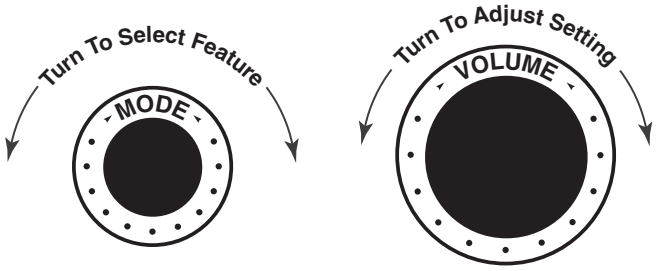

```
MAIN SETUP MENU          M

  HOME THEATER
 PARTY          TONE
>INPUT TRIMS    LABELS/SOURCE
 ADA BUS        AC POWER
 VOLUME         VERSION
 BALANCE        CLOCK SET

                FACTORY DEFAULT
```

The Volume knob is used to raise or lower Input Trim levels for each source.

```
INPUT TRIM SETUP         P M


 XM TUNER       = -3dB
>FM TUNER       = +2dB
 CD PLAYER      =  0dB
 CD LIBRARY     =  0dB
 SATELLITE      =  0dB
 CABLE BOX      =  0dB
 DVD PLAYER     =  0dB
 AUXILIARY      =  0dB
```

```
INPUT TRIM SETUP         P M


>XM TUNER       = -3dB
 FM TUNER       =  0dB
 CD PLAYER      =  0dB
 CD LIBRARY     =  0dB
 SATELLITE      =  0dB
 CABLE BOX      =  0dB
 DVD PLAYER     =  0dB
 AUXILIARY      =  0dB
```

ADA Bus Setup



The ADA Bus Setup page allows you to set two multi-room specific features and three global features. Use the Mode knob to select the feature and the Volume knob to adjust it.

```
ADA BUS SETUP          P M

>MAX ROOM = 8

 MAX INPUT= 8

 IR RECEIVER=ON

 BACKLIGHT TIMEOUT=NONE

 OSD TIMEOUT=NONE
```

The Max Input is much like the Max Room feature where you can limit the number of inputs on the unit. Like the Max Room feature, the upper inputs do not display and you may need to rename your lower sources to match the system.

```
ADA BUS SETUP          P M

 MAX ROOM = 8

 MAX INPUT= 8

>IR RECEIVER=ON

 BACKLIGHT TIMEOUT=NONE

 OSD TIMEOUT=NONE
```

Back Light Timeout refers to not just the video display but also all of the buttons. The HTR-2400 can go completely dark in 1 to 60 seconds or stay on all the time whenever a zone is on.

```
ADA BUS SETUP          P M

 MAX ROOM = 8

 MAX INPUT= 8

 IR RECEIVER=ON

 BACKLIGHT TIMEOUT=NONE

>OSD TIMEOUT=NONE
```

```
MAIN SETUP MENU          M

  HOME THEATER
 PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
>ADA BUS        AC POWER
 VOLUME         VERSION
 BALANCE        CLOCK SET

               FACTORY DEFAULT
```

The Max Room features lets you limit the number of rooms that the user sees when they turn the Room knob. This effectively reduces the number of rooms. So if you are using only five multi-room zones, you can set the Max Room to equal 5.

```
ADA BUS SETUP          P M

 MAX ROOM = 8

>MAX INPUT= 8

 IR RECEIVER=ON

 BACKLIGHT TIMEOUT=NONE

 OSD TIMEOUT=NONE
```

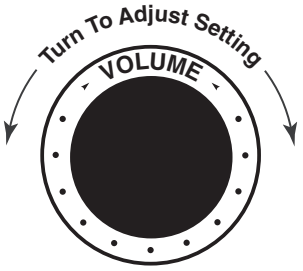
IR Receiver refers the HTR-2400's front panel IR receiver. If you notice interference from IR emitting sources, try turning the IR receiver off.

```
ADA BUS SETUP          P M

 MAX ROOM = 8

 MAX INPUT= 8

 IR RECEIVER=ON

>BACKLIGHT TIMEOUT=NONE

 OSD TIMEOUT=NONE
```

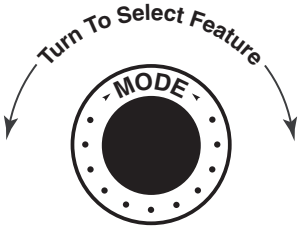
The OSD (On Screen Display or GUI) can be set to time out independent of the video display. Set in one second increments, the OSD can time out in 1 to 60 seconds or remain on indefinitely. If you have set the Back Light to time out sooner than the OSD, then the display will blank earlier.

VOLUME SETUP

On the Volume Setup page, one can set volume parameters for all eight rooms of the whole-house system. This includes setting a room's maximum volume level, storing volume presets, and selecting if a room turns on to the last acoustical settings used in that room or to all presets stored on Preset 1 (including Volume, Tones, and Balance Presets 1).



When the arrow is on the room name/number, turning the Volume knob permits you to cycle through the eight rooms on the system.



Once the desired room is selected, turning the Mode knob advances the arrow to the next feature.

```
VOLUME SETUP              P M
 ROOM  3
>VOLUME=53    VOLUME MAX=80

 TURN ON WITH LAST USED

 STORE 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3       RECALL 3
 STORE 4       RECALL 4
```

Turn the Mode knob to advance to the next feature, Volume Max, which refers to the maximum volume level the room can reach. This feature is useful to prevent a room from either distorting or playing louder than intended. Use the Volume knob to adjust the room's maximum volume level.

Turn the Mode knob to advance to the next feature, Turn On With, which determines if the room will turn on to its last acoustical settings used or turn on to a preset acoustical setting. The preset number recalled involves all Preset 1 functions, including Volume, Tones, and Balance. As such, this feature is ideal for starting at the perfect acoustical level each and every time the room is turned on. To alter between Last Used or Preset Recall number 1, turn the Volume knob.

```
MAIN SETUP MENU           M

  HOME THEATER
 PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
 ADA BUS        AC POWER
>VOLUME         VERSION
 BALANCE        CLOCK SET

                FACTORY DEFAULT
```

```
VOLUME SETUP              P M
>ROOM  1
```

```
VOLUME SETUP              P M
>ROOM  3
 VOLUME=45    VOLUME MAX=80

 TURN ON WITH LAST USED

 STORE 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3       RECALL 3
 STORE 4       RECALL 4
```

When on Volume, you can alter a rooms volume level. This is useful for setting up the four Volume Presets. Alternately, you could also adjust the room's volume level from its keypad or control.

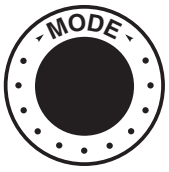
Volume Preset 1 can be used as the turn on preset volume level.

```
VOLUME SETUP              P M
 ROOM  3
 VOLUME=53   >VOLUME MAX=65

 TURN ON WITH LAST USED

 STORE 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3       RECALL 3
 STORE 4       RECALL 4
```

```
VOLUME SETUP              P M
 ROOM  3
 VOLUME=53    VOLUME MAX=65

>TURN ON WITH RECALL 1

 STORE 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3       RECALL 3
 STORE 4       RECALL 4
```

Storing Volume Presets first requires that the desired volume level is displayed. Once the correct volume level has been dialed in, turn the Mode knob to advance the arrow to the preset you wish to store (STORE 1 - 4).

Then press the Mode knob to Store the preset. The display will momentarily display the word OK and then return to showing the word STORE #.



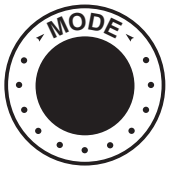
Press Mode To Store

```
VOLUME SETUP              P M
 ROOM  3
 VOLUME=53    VOLUME MAX=65

 TURN ON WITH RECALL 1

>STORE 1       RECALL 1
```

```
VOLUME SETUP              P M
 ROOM  3
 VOLUME=53    VOLUME MAX=65

 TURN ON WITH RECALL 1

>   OK 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3       RECALL 3
 STORE 4       RECALL 4
```

Again, Volume Preset 1 is the preset used for room turn on volume recall.

```
VOLUME SETUP              P M
 ROOM  3
 VOLUME=53    VOLUME MAX=65

 TURN ON WITH RECALL 1

 STORE 1       RECALL 1
 STORE 2      >RECALL 2
 STORE 3       RECALL 3
 STORE 4       RECALL 4
```



Press Mode To Recall

To recall a Volume Preset, turn the Mode knob so that the arrow is on the preset number you wish to Recall. Then press the Mode knob to Recall this level. Assuming different volume levels have been stored on the four presets, you should see the VOLUME levels at the top of the screen change.

BALANCE SETUP

On the Balance Setup page, you can alter the balance level of the room as well as store two Balance Presets. Balance Preset 1 can be used as the turn on balance level.

```
BALANCE SETUP             P M
>ROOM  1

 BALANCE=EQUAL
```

```
BALANCE SETUP             P M
 ROOM  1

>BALANCE=RIGHT  4

 STORE 1       RECALL 1
```

```
BALANCE SETUP             P M
 ROOM  1

 BALANCE=RIGHT  4

>STORE 1       RECALL 1
 STORE 2       RECALL 2
```

```
MAIN SETUP MENU           M

  HOME THEATER
 PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
 ADA BUS        AC POWER
 VOLUME         VERSION
>BALANCE        CLOCK SET

                FACTORY DEFAULT
```

Like the Volume Page, use the Mode knob to advance through features and the Volume knob to adjust Balance levels. When you are ready to store a Balance Preset, navigate to the Store # and then press the Mode knob. The display will echo OK.

```
BALANCE SETUP             P M
 ROOM  1

 BALANCE=EQUAL


 STORE 1       RECALL 1
 STORE 2      >RECALL 2
```

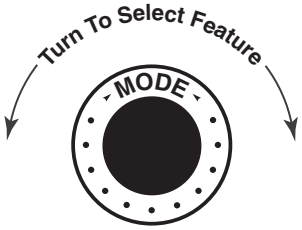
TONE SETUP

The Tone Setup page permits you to adjust Bass, Midrange, and Treble levels as well as turn on or off the Loudness contour filter and the Limiter. You can also store up to four Tone Presets on this page. Again, Tone Preset 1 can be used as the Turn On preset which will include levels and filters.

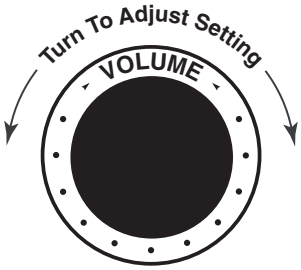
```
MAIN SETUP MENU            M

  HOME THEATER
 PARTY          >TONE
 INPUT TRIMS     LABELS/SOURCE
 ADA BUS         AC POWER
 VOLUME          VERSION
 BALANCE         CLOCK SET

                FACTORY DEFAULT
```

```
TONE SETUP                 P M
>ROOM  1

 BASS    0     LOUDNESS   OFF
 MID     0     LIMITER    OFF
 TREB    0     SET ALL FLAT

 STORE 1        RECALL 1
 STORE 2        RECALL 2
 STORE 3        RECALL 3
 STORE 4        RECALL 4
```

Use the Mode knob to navigate between features.



Use the Volume knob to set levels or turn the Loudness and Limiter on and off.

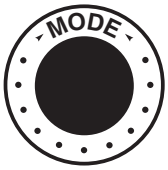


The Loudness contour filter is an active filter that enhances bass levels especially at low volume levels. As volume is increased the effect of the Loudness filter is lowered.

The Limiter filter assists in preventing volume peaks from being too loud, especially when the volume level is high. At high levels, the limiter helps prevent sharp spikes in volume.

The Set All Flat function sets all levels back to 0 and turns the Loudness and Limiter filters off.

To return all levels to 0, navigate to the Set All Flat feature using the Mode knob and then press the Mode knob.



Press Mode To Set Flat

```
TONE SETUP                P M
 ROOM  1

 BASS + 5     LOUDNESS   ON
 MID  - 1     LIMITER    ON
 TREB + 3    >SET ALL FLAT

 STORE 1
 STORE 2
 STORE 3
 STORE 4
```

```
TONE SETUP                P M
 ROOM  1

 BASS   0     LOUDNESS   OFF
 MID    0     LIMITER    OFF
 TREB   0    >SET ALL FLAT

 STORE 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3       RECALL 3
 STORE 4       RECALL 4
```

```
TONE SETUP                P M
 ROOM  1

 BASS + 5     LOUDNESS   ON
 MID  - 1     LIMITER    ON
 TREB + 3     SET ALL FLAT

>STORE 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3       RECALL 3
 STORE 4       RECALL 4
```

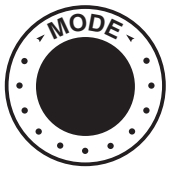
To Store a Tone Preset, which will include Bass, Midrange and Treble levels as well as the Loudness Filter and Limiter Filter status, turn the Mode knob to the Preset Store number you wish to save and then press the Mode knob. Again, Tone Preset 1 can be used as the Turn On preset.

The screen will momentarily display the word OK indicating that the settings have been stored.

```
TONE SETUP                P M
 ROOM  1

 BASS + 5     LOUDNESS   ON
 MID  - 1     LIMITER    ON
 TREB + 3     SET ALL FLAT

>   OK 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3       RECALL 3
 STORE 4       RECALL 4
```

Press Mode To Store

```
TONE SETUP                P M
 ROOM  1

 BASS + 5     LOUDNESS   ON
 MID  - 1     LIMITER    ON
 TREB + 3     SET ALL FLAT

 STORE 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3      >RECALL 3
 STORE 4       RECALL 4
```



Press Mode To Recall

To recall a Tone Preset level, turn the Mode knob until the arrow is on the Recall number whose settings you wish to load. Then press the Mode knob to recall that Tone Preset number.

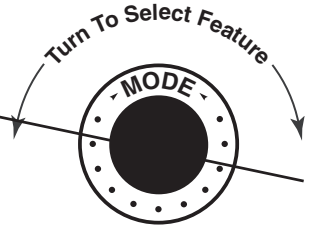
```
TONE SETUP                P M
 ROOM  1

 BASS + 8     LOUDNESS   ON
 MID  + 3     LIMITER    OFF
 TREB + 5     SET ALL FLAT

 STORE 1       RECALL 1
 STORE 2       RECALL 2
 STORE 3      >RECALL 3
 STORE 4       RECALL 4
```

LABELS & SOURCE SETUP

On the Labels & Source Setup page, you can relabel the room and source names to customize the system. Here you can also assign the source's secondary function to the input #/source name and load this program to system keypads. This will be discussed on the next page.

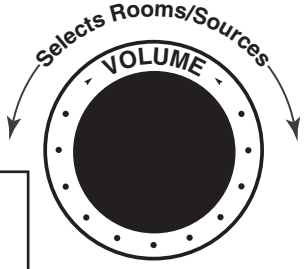
```
MAIN SETUP MENU            M

  HOME THEATER
 PARTY          TONE
 INPUT TRIMS  >LABELS/SOURCE
 ADA BUS        AC POWER
 VOLUME         VERSION
 BALANCE        CLOCK SET

                FACTORY DEFAULT
```

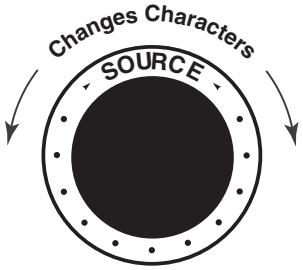
```
LABELS/SOURCE SETUP      P M
                  |
>ROOM    1        ROOM  1
                  |
 INPUT   1        XM TUNER

 SOURCE TYPE = ADA TUNER
 ADDRESS     = TUNER 1 MOD 1

 PROGRAM ALL
```



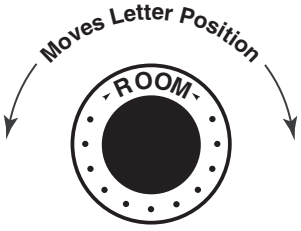
Use the Mode knob to navigate between features. The horizontal arrow will indicate which feature you are on. Use the Volume knob to advance through rooms or sources (inputs).

A vertical arrow indicates the character that can be changed. Using the Source knob, change the first character as needed (in this example, we are going to relabel ROOM 1 to LIVING RM).





Use the Room knob to advance the vertical arrow to the next character position. Repeat the character change using the Source knob. Continue this process for all letters of the room name.




```
LABELS/SOURCE SETUP      P M
                  |
>ROOM    1        LIVING RM
                  |
 INPUT   1        XM TUNER

 SOURCE TYPE = ADA TUNER
 ADDRESS     = TUNER 1 MOD 1

 PROGRAM ALL
```

Repeat these steps for other room names and sources as needed.

SOURCE CONTROL SETUP

The Source Control setup permits you to assign the secondary source transport functions to the inputs/source names on your system. The chart to the right details the various source types and addresses. Those marked in bold are most typically used.

SOURCE TYPE	IR LEARNER	ADA TUNER	SPECIAL CD	LVI	NONE
ADDRESSES	**IRL 1 OUT 1**	**TUNER 1 MOD 1**	**SPECIAL CD 1**	LVI 1	
BOLD ADDRESS	**IRL 1 OUT 2**	**TUNER 1 MOD 2**	**SPECIAL CD 2**	LVI 2	
INDICATES MOST	**IRL 1 OUT 3**	TUNER 1 MOD 3	SPECIAL CD 3	LVI 3	
COMMON DEVICES	**IRL 1 OUT 4**	TUNER 2 MOD 1	SPECIAL CD 4	LVI 4	
	IRL 1 OUT 5	TUNER 2 MOD 2	SPECIAL CD 5	LVI 5	
	IRL 1 OUT 6	TUNER 2 MOD 3	SPECIAL CD 6	LVI 6	
	IRL 1 OUT 7	TUNER 3 MOD 1	SPECIAL CD 7	LVI 7	
	IRL 1 OUT 8	TUNER 3 MOD 2	SPECIAL CD 8	LVI 8	
	IRL 2 OUT 1	TUNER 3 MOD 3			
	IRL 2 OUT 2	TUNER 4 MOD 1			
	IRL 2 OUT 3	TUNER 4 MOD 2			
	IRL 2 OUT 4	TUNER 4 MOD 3			
	IRL 2 OUT 5	TUNER 5 MOD 1			
	IRL 2 OUT 6	TUNER 5 MOD 2			
	IRL 2 OUT 7	TUNER 5 MOD 3			
	IRL 2 OUT 8	TUNER 6 MOD 1			
	.	TUNER 6 MOD 2			
	.	TUNER 6 MOD 3			
	.	TUNER 7 MOD 1			
	IRL 9 OUT 1	TUNER 7 MOD 2			
	IRL 9 OUT 2	TUNER 7 MOD 3			
	IRL 9 OUT 3	TUNER 8 MOD 1			
	IRL 9 OUT 4	TUNER 8 MOD 2			
	IRL 9 OUT 5	TUNER 8 MOD 3			
	IRL 9 OUT 6	TUNER 9 MOD 1			
	IRL 9 OUT 7	TUNER 9 MOD 2			
	IRL 9 OUT 8	TUNER 9 MOD 3			

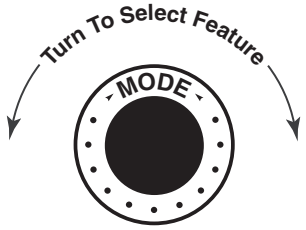
```
LABELS/SOURCE SETUP      P M
                            |
 ROOM    1       LIVING RM
                 |
 INPUT   1       XM TUNER

>SOURCE TYPE = ADA TUNER
 ADDRESS      = TUNER 1 MOD 1
```

```
LABELS/SOURCE SETUP      P M
                            |
 ROOM    1       LIVING RM
                 |
 INPUT   4       CD LIBRARY

>SOURCE TYPE = IR LEARNER
 ADDRESS      = IRL 1   OUT 4
```

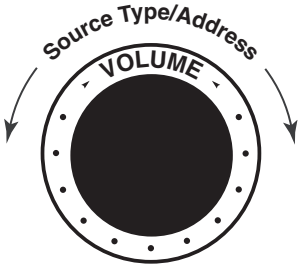
```
LABELS/SOURCE SETUP      P M
                            |
 ROOM    1       LIVING RM
                 |
 INPUT   1       XM TUNER

>SOURCE TYPE = SPECIAL CD
 ADDRESS      = SPECIAL CD 1
```

```
LABELS/SOURCE SETUP      P M
                            |
 ROOM    1       LIVING RM
                 |
 INPUT   1       XM TUNER

>SOURCE TYPE = LVI
```

```
LABELS/SOURCE SETUP      P M
                            |
 ROOM    1       LIVING RM
                 |
 INPUT   1       XM TUNER

>SOURCE TYPE = NONE
 ADDRESS      =

 PROGRAM ALL
```



Use the Mode knob to cycle between setup options and the Volume knob to change Inputs, Source Types and then Source Addresses.



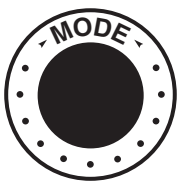
The chart below shows the HTR-2400's out of the box Source Control setup. It's internal tuners are always ADA Tuner 1, Modules 1 and 2.

INPUT #	SOURCE NAME	SOURCE TYPE	ADDRESS
INPUT 1	XM TUNER	ADA TUNER	TUNER 1 MOD 1
INPUT 2	FM TUNER	ADA TUNER	TUNER 1 MOD 2
INPUT 3	CD PLAYER	IR LEARNER	IRL 1 OUT 3
INPUT 4	CD LIBRARY	IR LEARNER	IRL 1 OUT 4
INPUT 5	SATELLITE	IR LEARNER	IRL 1 OUT 5
INPUT 6	CABLE BOX	IR LEARNER	IRL 1 OUT 6
INPUT 7	DVD PLAYER	IR LEARNER	IRL 1 OUT 7
INPUT 8	AUXILIARY	IR LEARNER	IRL 1 OUT 8

If you are using an iHome Multi-Center CD Server, you will need to assign the server's inputs to Special CD settings.

```
LABELS/SOURCE SETUP      P M
                            |
 ROOM    1       LIVING RM
                 |
 INPUT   4       CD LIBRARY

 SOURCE TYPE = SPECIAL CD
 ADDRESS     = SPECIAL CD 2

>  UPLOADING > > > > >
```

Once the Source Control Setup is completed, you can Upload these settings to both keypads and the HTR-2400's front panel. Just like an ADA keypad, the buttons flanking the HTR-2400's screen require programming.



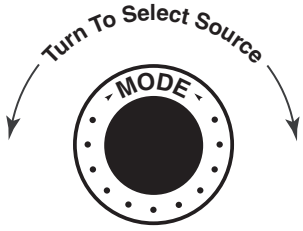
Press Mode To Program All

AC Power Setup

The AC Power Setup page permits you to have the HTR-2400's four AC power outlets turn on and off with specific source inputs. The Home Theater setup offers a feature similar to this.

```
MAIN SETUP MENU              M

  HOME THEATER
 PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
 ADA BUS       >AC POWER
 VOLUME         VERSION
 BALANCE        CLOCK SET

                FACTORY DEFAULT
```

```
AC POWER SETUP              P M
                    |
          AC OUTLET 1 2 3 4
>XM TUNER
 FM TUNER
 CD PLAYER          *
 CD LIBRARY           *
 SATELLITE
 CABLE BOX
 DVD PLAYER             *
 AUXILIARY                *
```

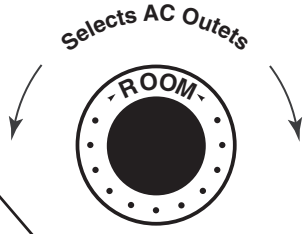


The Mode knob advances through the source inputs. A horizontal arrow indicates which source is being adjusted.

The above screen display represents the ADA out of the box setup.

```
AC POWER SETUP              P M
                    |
          AC OUTLET 1 2 3 4
 XM TUNER
 FM TUNER
>CD PLAYER          *
```

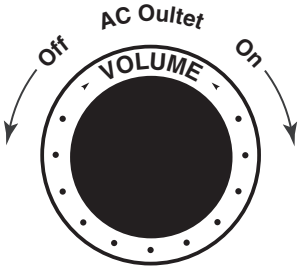
The Room knob is used to select the AC Outlet number. A vertical arrow indicates which outlet is being adjusted.




```
AC POWER SETUP              P M
                    |
          AC OUTLET 1 2 3 4
 XM TUNER
 FM TUNER
>CD PLAYER
 CD LIBRARY           *
 SATELLITE
 CABLE BOX
 DVD PLAYER             *
 AUXILIARY                *
```

```
AC POWER SETUP              P M
                    |
          AC OUTLET 1 2 3 4
 XM TUNER
 FM TUNER
 CD PLAYER
>CD LIBRARY            *
```

The Volume knob is used to turn the selected AC Outlet to turn on and off with the Source indicated. When an AC Outlet is set to track a source, a * will appear.



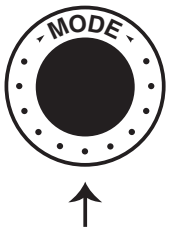

```
AC POWER SETUP              P M
                    |
          AC OUTLET 1 2 3 4
 XM TUNER
 FM TUNER
 CD PLAYER
 CD LIBRARY
 SATELLITE
>CABLE BOX             *
 DVD PLAYER              *
 AUXILIARY                 *
```

Note that certain sources require constant AC power and as such, should not be plugged into the HTR-2400's switched AC Outlets.

For a source component with two or more audio outputs that can be switched on and off via one AC Outlet, the HTR-2400 permits multiple source inputs to activate a single AC Outlet.

VERSION INFORMATION

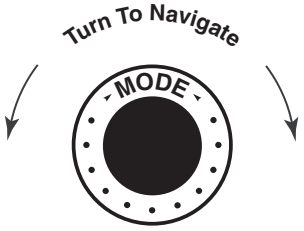
From time to time, it may be necessary to access the software/firmware version numbers of the HTR-2400. When you enter the Version page, the position arrow opens on the Update option. To update the list, press the Mode knob.



Press Mode To Update Version Numbers

```
MAIN SETUP MENU          M

  HOME THEATER
 PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
 ADA BUS        AC POWER
 VOLUME        >VERSION
 BALANCE        CLOCK SET

                FACTORY DEFAULT
```

```
VERSION         >UPDATE    P M

 AUDIO     v3.2

 VIDEO     v1.0

 THEATER
   PGM = RELEASE 1.30
   ROM = PROM v1.03
   DSP = DSP 1.2.5201
```



Again, turning the Mode knob will permit you to exit the Setup area entirely by selecting M or return to the previous page by selecting the letter P. Press the Mode knob to move to that screen.

CLOCK SET

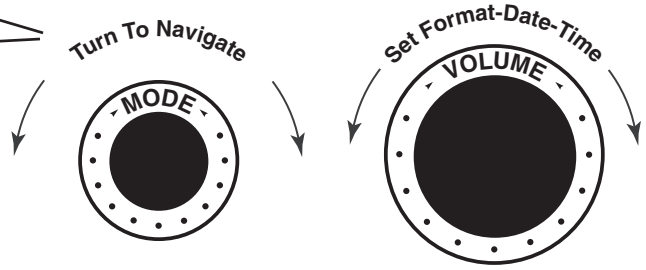
The Clock Set page permits you to set the date and time as well as determine if the clock will display in 24 Hour or 12 Hour mode.

```
CLOCK SET                    P M

>FORMAT=12HR

 SAT JAN  1 2005  12:01
```

```
CLOCK SET                    P M

 FORMAT=12HR

 |
 SAT JAN  1 2005  12:01
```

```
MAIN SETUP MENU          M

  HOME THEATER
 PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
 ADA BUS        AC POWER
 VOLUME         VERSION
 BALANCE       >CLOCK SET

                FACTORY DEFAULT
```

Use the Mode knob to advance the arrow to the feature to be adjusted and use the Volume knob to make the adjustment.



FACTORY DEFAULT

The Factory Default page permits you to reset the multi-room section of the HTR-2400 to the parameters set by ADA. Here all aspects of the HTR-2400's setup are restored. When you enter the Factory Default page you will be prompted prior to the actual reset. Use the Mode knob to navigate the page and if you select to reset the Factory Defaults, press the Mode knob.

```
MAIN SETUP MENU          M

  HOME THEATER
 PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
 ADA BUS        AC POWER
 VOLUME         VERSION
 BALANCE        CLOCK SET

               >FACTORY DEFAULT
```

Home & Theater Setup Comparisons

The HTR-2400 with respect to programming and setup is essentially two systems in one. Setting up the Multi-Room system is done independently of the Home Theater system. While some of the features and setup options are similar, the two setups need to be done independently. Here are some comparisons.

Multi-Room Sources
The Multi-Room system uses only the eight analog audio inputs. You can limit the number of inputs the user would see and this process in essence reduces the inputs, from say 8 to 5 inputs. That means the first 5 inputs would be used. In this example, if you are using ADA keypads with source specific buttons, you will want to make certain that the first 5 buttons match the remaining five sources (MC-5511 has fixed inputs). You cannot assign jacks to source names.

Home Theater Sources
The Home Theater system can also limit the number of sources the user sees and like the Multi-Room system, the inputs are reduced in number, for example from 20 to 11. And like the Multi-Room system, you can relabel the source names. The Home Theater system can access all eight Multi-Room sources as well as additional Home Theater sources. Unlike the Multi-Room system, the Home Theater system is more flexible, permitting you to assign A/V jacks to source names.

Multi-Room Source Control
The Multi-Room system permits you to assign source control per input. This setup is done in addition to the Home Theater's setup.

Home Theater Source Control
The Home Theater system permits you to assign source control per input. This setup is done in addition to the Multi-Room's setup.

Multi-Room Source AC Control
The Multi-Room system permits you to assign AC outlets to sources. This setup is done in addition to the Home Theater's setup.

Home Theater Source AC Control
The Home Theater system permits you to assign AC outlets to sources. This setup is done in addition to the Multi-Room's setup.

Multi-Room Turn On Presets
The Multi-Room system permits you to set an acoustical turn on preset per room including volume, tones, and tone filters.

Home Theater Turn On Presets
The Home Theater permits you to set a turn on volume level preset, turn on input, and default modes per input.

Multi-Room Maximum Volume Level
The Multi-Room system permits you to set a maximum volume level per zone/room.

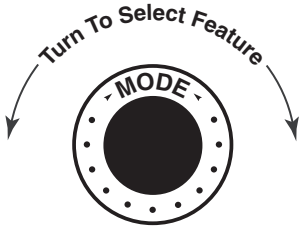
Home Theater Maximum Volume Level
The Home Theater system permits you to set a maximum volume level.

Multi-Room Factory Defaults
The Multi-Room system permits you to recall Factory Defaults. Installer Defaults are not needed because rooms have turn on presets.

Home Theater Factory Defaults
The Home Theater system permits you to recall the Factory Defaults. You can also store your Theater's setup as an Installer Default.

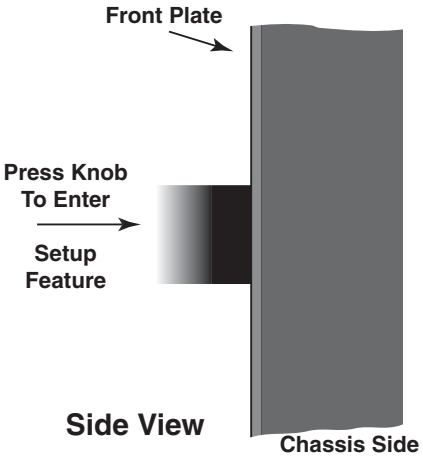
HOME THEATER SETUP

Once you are in the HTR-2400's setup mode, you use the Mode knob to navigate between features. The arrow will indicate which feature is selected and pressing the Mode button enters this feature.




```
MAIN SETUP MENU            M

> HOME THEATER
 PARTY          TONE
 INPUT TRIMS    LABELS/SOURCE
 ADA BUS        AC POWER
 VOLUME         VERSION
 BALANCE        CLOCK SET

                FACTORY DEFAULT
```

To enter the Home Theater setup, turn the Mode knob so that the arrow is on Home Theater and press the Mode knob.




```
HT MAIN SETUP MENU      P M

>HT SPEAKER
 HT SOURCE
 HT GLOBAL
 HT TONE
```

```
HT MAIN SETUP MENU      P M

 HT SPEAKER
>HT SOURCE
```

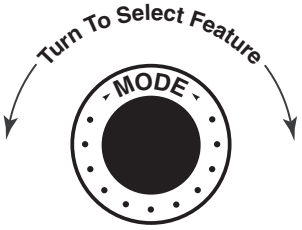
```
HT MAIN SETUP MENU      P M

 HT SPEAKER
 HT SOURCE
>HT GLOBAL
```

```
HT MAIN SETUP MENU      P M

 HT SPEAKER
 HT SOURCE
 HT GLOBAL
>HT TONE
```

```
HT MAIN SETUP MENU      P M

 HT SPEAKER
 HT SOURCE
 HT GLOBAL
 HT TONE
>HT PROLOGIC IIx
```

```
HT MAIN SETUP MENU      P M

 HT SPEAKER
 HT SOURCE
 HT GLOBAL
 HT TONE
 HT PROLOGIC IIx
>HT INFORMATION
```

Use the Mode knob to navigate through setup options. To return to the previous menu, navigate to the letter P and press the Mode knob.




```
HT MAIN SETUP MENU     <P M

 HT SPEAKER
 HT SOURCE
 HT GLOBAL
 HT TONE
 HT PROLOGIC IIx
 HT INFORMATION
```

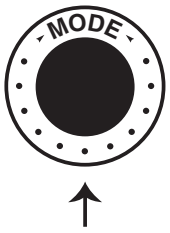
To exit the setup from any menu, navigate to the letter M and press the Mode knob.

```
HT MAIN SETUP MENU      P M>

 HT SPEAKER
 HT SOURCE
 HT GLOBAL
 HT TONE
 HT PROLOGIC IIx
 HT INFORMATION
```

HOME THEATER SETUP • SPEAKER SIZE

```
HT MAIN SETUP MENU      P M

>HT SPEAKER
 HT SOURCE
 HT GLOBAL
 HT TONE
 HT PROLOGIC IIx
 HT INFORMATION
```

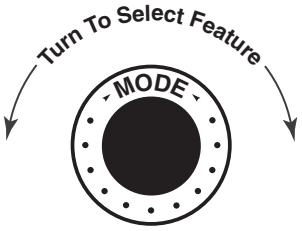
To begin the setup of the home theater, determine speaker size and the number of speakers you are using. While the arrow is on HT SPEAKER, press the Mode knob.



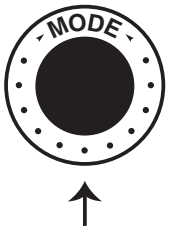
Press Mode To Enter

```
SPEAKER SETUP            P M

 NOISE  LEFT  CENTER  RIGHT
 SEQ     0.0    0.0    0.0
 SIZE
 DELAY L SURR  SUB   R SURR
>TRIM*   0.0    0.0    0.0
 SOLO          XOVER
       LB SUR  80HZ  RB SUR
         0.0           0.0
   STORE 1     RECALL 1
```

Turn the Mode knob so that the arrow is on the words SIZE.




```
SPEAKER SETUP            P M

 NOISE  LEFT  CENTER  RIGHT
 SEQ     0.0    0.0    0.0
>SIZE
 DELAY L SURR  SUB   R SURR
 TRIM*   0.0    0.0    0.0
 SOLO          XOVER
       LB SUR  80HZ  RB SUR
         0.0           0.0
   STORE 1     RECALL 1
```



Press Mode To Enter

Then, press the Mode knob to engage the size menu. Note that the * (star) shifts from the default TRIM feature to the SIZE feature. Also, the display changes slightly showing the speakers current size settings.

```
SPEAKER SETUP            P M
          |
 NOISE  LEFT  CENTER  RIGHT
 SEQ    SMALL  SMALL   SMALL
>SIZE*
 DELAY L SURR  SUB   R SURR
 TRIM   SMALL ACTIVE  SMALL
 SOLO          XOVER
       LB SUR  80HZ  RB SUR
         SMALL          SMALL
   STORE 1     RECALL 1
```

An arrow above the L in the word LEFT will also appear indicating that you are ready to adjust the Left channel. Use the Volume knob to select between the Large or Small speaker setting. Please note, the standard setting is SMALL.

```
SPEAKER SETUP            P M
          |
 NOISE  LEFT  CENTER  RIGHT
 SEQ    LARGE  SMALL   LARGE
>SIZE*
 DELAY L SURR  SUB   R SURR
 TRIM   SMALL ACTIVE  SMALL
 SOLO          XOVER
       LB SUR  80HZ  RB SUR
         SMALL          SMALL
   STORE 1     RECALL 1
```

Note, that as you change the speaker size for the left channel, the right channel tracks.

Large Speakers - Typically, speakers that can play low frequencies.

Small Speakers - Standard - Typically speakers designed to work in conjunction with a subwoofer. Also the THX standard.

To advance the channel selector arrow to another speaker channel, turn the Room knob.

If your home theater is lacking a center channel speaker, selecting NONE will redirect audio to the left and right channels.

```
SPEAKER SETUP            P M

 NOISE   LEFT  CENTER  RIGHT
 SEQ     SMALL   NONE   SMALL
>SIZE*
 DELAY L SURR   SUB    R SURR
 TRIM    SMALL ACTIVE   SMALL
 SOLO          XOVER
       LB SUR   80HZ   RB SUR
        NONE            NONE
    STORE 1      RECALL 1
```

```
SPEAKER SETUP            P M

 NOISE   LEFT  CENTER  RIGHT
 SEQ     LARGE   SMALL   LARGE
>SIZE* |
 DELAY L SURR   SUB    R SURR
 TRIM    LARGE ACTIVE   LARGE
 SOLO          XOVER
       LB SUR   80HZ   RB SUR
```

```
SPEAKER SETUP            P M

 NOISE   LEFT  CENTER  RIGHT
 SEQ     LARGE   SMALL   LARGE
>SIZE* |
 DELAY L SURR   SUB    R SURR
 TRIM    NONE ACTIVE    NONE
 SOLO          XOVER
       LB SUR   80HZ   RB SUR
        NONE            NONE
    STORE 1      RECALL 1
```

If you selected the NONE setting for L SURR/R SURR, then you automatically set the back surround speakers (LB SUR & RB SUR) to NONE as well. This is because you can never have back surround speakers without left & right surround speakers. Even if you have your surround speakers up against the back of the theater room, they are still the primary surround speakers. The back surround speakers are the additional one or two speakers for 7.1 playback.

To change or make active the back surround channels, turn the Room knob so that the channel selector arrow is above the L in LB SUR. By turning the Volume knob, here you will cycle between five speaker setting options: LARGE & NONE, SMALL & NONE, LARGE & LARGE, NONE & NONE. This is because back surround works with either one speaker or two speakers. Please note, that adjusting either LB SUR or RB SUR have the same affect so it does not matter which position you have the channel selector arrow on.

To change the surround speakers, turn the Room knob so that the channel selector arrow is above the L in L SURR.

As you turn the Volume knob to select between LARGE, SMALL or NONE, you will notice that both left surround and right surround speakers track each other.

```
SPEAKER SETUP            P M

 NOISE   LEFT  CENTER  RIGHT
 SEQ     SMALL   SMALL   SMALL
>SIZE*
 DELAY L SURR   SUB    R SURR
 TRIM    SMALL ACTIVE   SMALL
 SOLO  |       XOVER
       LB SUR   80HZ   RB SUR
        NONE            NONE
    STORE 1      RECALL 1
```

```
SPEAKER SETUP            P M

 NOISE   LEFT  CENTER  RIGHT
 SEQ     SMALL   SMALL   SMALL
>SIZE*
 DELAY L SURR   SUB    R SURR
 TRIM    SMALL ACTIVE   SMALL
 SOLO  |       XOVER
       LB SUR   80HZ   RB SUR
        SMALL           NONE
    STORE 1      RECALL 1
```

```
SPEAKER SETUP            P M

 NOISE   LEFT  CENTER  RIGHT
 SEQ     SMALL   SMALL   SMALL
>SIZE*
 DELAY L SURR   SUB    R SURR
 TRIM    SMALL ACTIVE   SMALL
 SOLO  |       XOVER
       LB SUR   80HZ   RB SUR
        LARGE           NONE
    STORE 1      RECALL 1
```

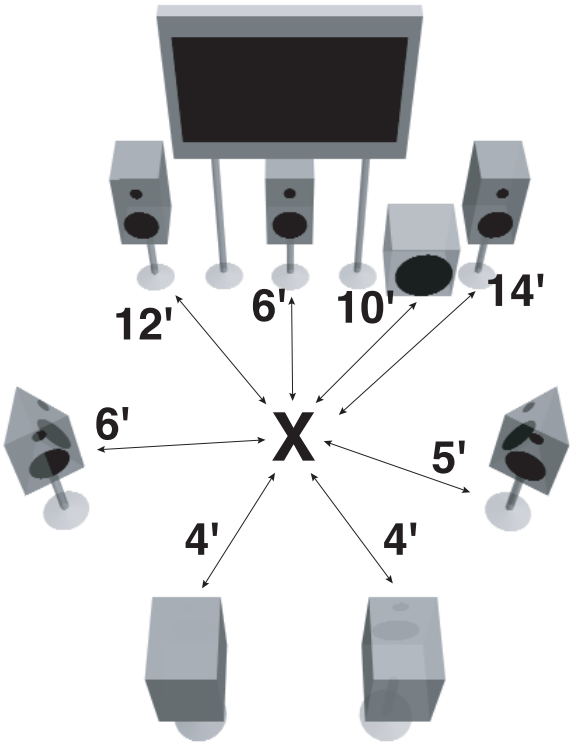
HOME THEATER SETUP • SPEAKER DELAY

Once you have your speakers set up correctly, you can begin the process of speaker calibration and time delay.

Time delay or single point time alignment takes into consideration that while sound travels at the speed of sound (fast), even a difference in distance of few feet will have a dramatic impact on which sounds reach you first.

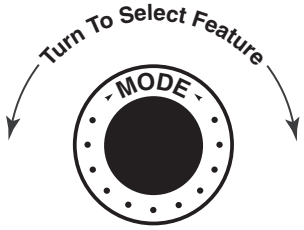
The overall idea is for the sounds from all speakers to reach you at the precise moment in time. If a speaker is further away than another speaker, then its sound will take longer to reach you. This is were Delay comes in. By delaying the closest speakers, all sounds will reach the primary listening position at the exact moment in time.

To begin this setup, you will need to measure the distances from each speaker (including the subwoofer) to the main seating position. Please note, the HTR-2400 features four Balance Presets, so if you have more than one critical listening position in your theater, you can setup several presets that are ideal for each position rather than compromise and setup a position in the middle of the space (although that will work too).

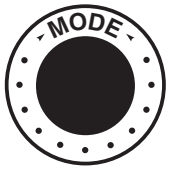


Using this diagram as an example, we note that the speaker furthest away is the Front Right speaker. You then simply subtract the other distances from this longest distance to get the delay levels per channel. Naturally, the Front Right speaker does not get delayed at all.

All Distances In Feet	Left	Center	Right	Left Surround	Right Surround	Subwoofer	Left Back Surround	
Furthest Speaker Distance	14	14	14	14	14	14	14	14
Distance of Each Speaker	12	6	14	6	5	10	4	4
Delay Distance	**2**	**8**	**0**	**8**	**9**	**4**	**10**	**10**

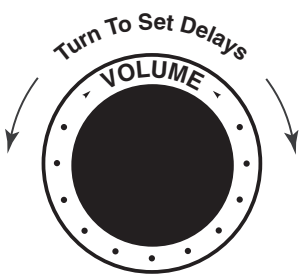


Turn the Mode knob so that the arrow is on the words DELAY and then press the Mode knob to enter this feature.



Press Mode To Enter

```
SPEAKER SETUP              P M
        |
 NOISE  LEFT  CENTER  RIGHT
 SEQ     0 FT   0 FT   0 FT
 SIZE
>DELAY*L SURR  SUB   R SURR
 TRIM    0 FT   0 FT   0 FT
 SOLO          XOVER
       LB SUR  70HZ  RB SUR
         0 FT          0 FT
   STORE 1     RECALL 1
```

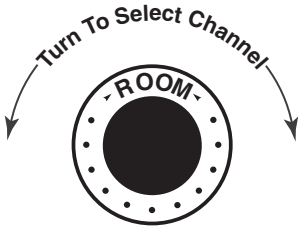


An arrow above the word LEFT will also appear. To set the delay level for this channel, turn the Volume knob. In this example, the front left speaker needs to be set to 2 feet.

```
SPEAKER SETUP            P M
                  |
 NOISE   LEFT   CENTER   RIGHT
 SEQ      2 FT    8 FT    0 FT
 SIZE
>DELAY*L SURR   SUB    R SURR
 TRIM     0 FT    0 FT    0 FT
 SOLO           XOVER
        LB SUR   70HZ   RB SUR
          0 FT            0 FT
    STORE 1       RECALL 1
```

```
SPEAKER SETUP            P M
                  |
 NOISE   LEFT   CENTER   RIGHT
 SEQ      2 FT    8 FT    0 FT
 SIZE
>DELAY*L SURR   SUB    R SURR
 TRIM     0 FT    0 FT    0 FT
 SOLO           XOVER
        LB SUR   70HZ   RB SUR
          0 FT            0 FT
    STORE 1       RECALL 1
```

To advance the channel selector arrow, turn the Room knob.



Again, use the volume knob to set the delay level for the Center channel.

Because the Right channel (speaker) is the furthest distance from the primary seating position, this speaker does not get delayed at all. As such, its Delay Level remains at 0.

```
SPEAKER SETUP            P M

 NOISE   LEFT   CEN
 SEQ      2 FT    8
 SIZE   |
>DELAY*L SURR   SU
 TRIM     8 FT    0
 SOLO           XOV
        LB SUR   7O
          0 FT
    STORE 1       RE
```

```
SPEAKER SETUP            P M

 NOISE   LEFT   CENTER   RIGHT
 SEQ      2 FT    8 FT    0 FT
 SIZE             |
>DELAY*L SURR   SUB    R SURR
 TRIM     8 FT    4 FT    0 FT
 SOLO           X
        LB SUR
          0 FT
    STORE 1
```

```
SPEAKER SETUP            P M

 NOISE   LEFT   CENTER   RIGHT
 SEQ      2 FT    8 FT    0 FT
 SIZE                     |
>DELAY*L SURR   SUB    R SURR
 TRIM     8 FT    4 FT    9 FT
 SOLO           XOVER
        LB SUR   70HZ   RB SUR
          0 FT            0 FT
    STORE 1       RECALL 1
```

Repeat these steps for each of the other speaker channels in the system. In this example, this involves setting the Left Surround Delay to 8 feet, the Subwoofer Delay to 4 feet, and the Right Surround Delay to 9 feet.

```
SPEAKER SETUP            P M

 NOISE   LEFT   CENTER   RIGHT
 SEQ      2 FT    8 FT    0 FT
 SIZE
>DELAY*L SURR   SUB
 TRIM     8 FT    4 FT
 SOLO   |       XOVER
        LB SUR   70HZ
          10 FT
    STORE 1       RECAL
```

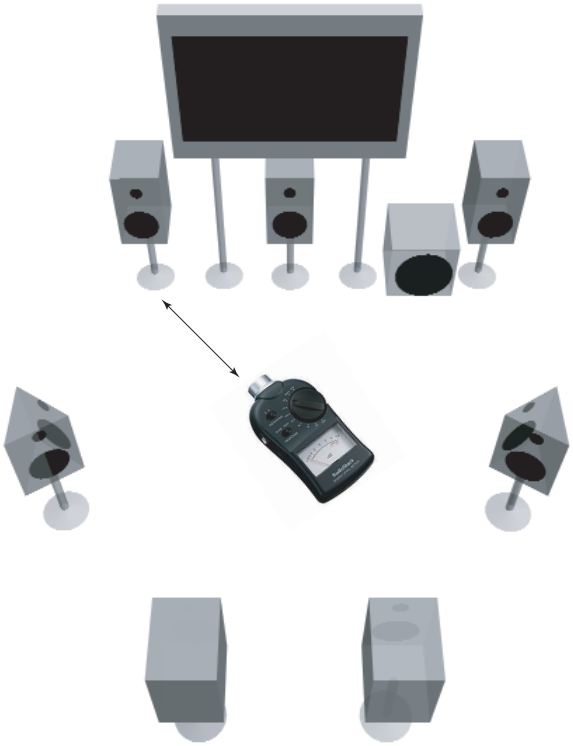
Again, use the Room knob to select channels and the Volume knob to adjust the channels Delay Level.

```
SPEAKER SETUP            P M

 NOISE   LEFT   CENTER   RIGHT
 SEQ      2 FT    8 FT    0 FT
 SIZE
>DELAY*L SURR   SUB    R SURR
 TRIM     8 FT    4 FT    9 FT
 SOLO           XOVER   |
        LB SUR   70HZ   RB SUR
          10 FT           10 FT
    STORE 1       RECALL 1
```

Because the two Back Surround Channels in this example (left and right) are the same distance, each of these channels will have their Delay set to 10 feet.

HOME THEATER SETUP • SPEAKER LEVEL

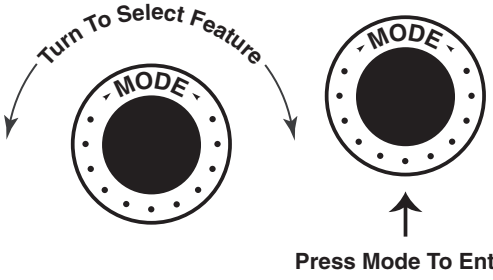
While delay settings make certain that the sound from each speaker arrives to the primary listening position at the precise moment in time, Speaker Level adjustment makes certain that the balance of volume between speakers is accurate. Since a speaker further away from the listening position will not sound as loud as one that is closer, you will need to adjust that speakers level a little higher than the closer speaker. Alternately, one type of speaker (a front channel speaker) may have different characteristics from a rear channel speaker. Basically, regardless of distance or speaker type, you will need to balance the room and to do this properly (not moving speakers around), you will set the Speaker Levels.



Here, you will need to use an SPL Meter (Sound Pressure Level). There are several on the market including a few models sold at Radio Shack (at the time of this printing). The more basic model features an analog meter (sweeping needle) while the slightly more expensive unit features a digital numeric readout. For Speaker Level setup, the more basic unit with a sweeping needle will work best.

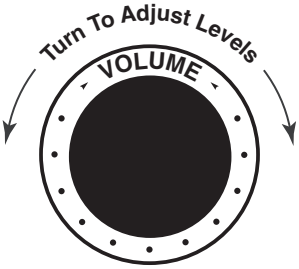
To setup the meter, make certain that you have good batteries and set the meter's two switches to "C Weighted" and "Slow". Set the Range to 80 dB (Decibels) which covers the level range from 70 dB to 86 dB because the range point for setting up a home theater is 75 dB. Position the SPL meter at the primary seating area and aim its microphone toward the first speaker (typically Front Left).

The HTR-2400 features a Pink Noise generator which creates static sound used to calibrate Speaker Levels. To engage the Pink Noise generator, turn the Mode knob until the arrow is on the word NOISE and then press the Mode knob to enter this feature.




```
SPEAKER SETUP            P M

>NOISE  LEFT  CENTER  RIGHT
 SEQ     0.0    0.0    0.0
 SIZE
 DELAY L SURR  SUB   R SURR
 TR
 SO
```

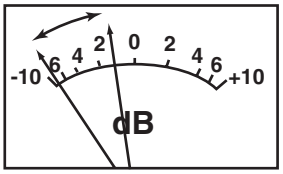
```
SPEAKER SETUP            P M
          |
>NOISE* LEFT  CENTER  RIGHT
 SEQ     0.0    0.0    0.0
 SIZE
 DELAY L SURR  SUB   R SURR
 TRIM    0.0    0.0    0.0
 SOLO          XOVER
       LB SUR  80HZ   RB SUR
         0.0            0.0
   STORE 1     RECALL 1
```



An arrow above the word LEFT will also appear. To set the Speaker Level for this channel, turn the Volume knob until the SPL meter is sweeping with -5 dB as the center point in the sweep.

```
SPEAKER SETUP              P M
                 |
>NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0    0.0     0.0
 SIZE
 DELAY L SURR   SUB    R SURR
 TRIM     0.0    0.0     0.0
 SOLO           XOVER
        LB SUR   80HZ   RB SUR
          0.0             0.0
    STORE 1      RECALL 1
```

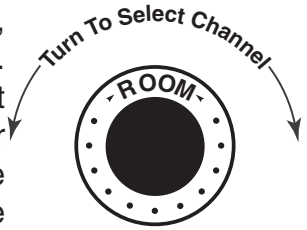
Needle Will Sweep With -5 dB As The Center Point



In the 80 dB Range, -5 dB is the 75 dB reference level.

Pink noise is static and the SPL meter will show that the level is constantly moving up and down. Here the idea is to focus on the center of the sweep and not on a peak or low point.

To advance the channel selector arrow, turn the Room knob. Aim the SPL meter at the Center speaker and use the Volume knob to set the speaker level for the Center channel.



Repeat these steps for all other speakers in your system.

```
SPEAKER SETUP              P M
                 |
>NOISE* LEFT   CENTER
 SEQ    + 4.0   + 2.5
 SIZE
 DELAY L SURR   SUB
 TRIM     0.0    0.0
 SOLO           XOVER
```

```
SPEAKER SETUP              P M
                           |
>NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0   + 2.5    -1.5
 SIZE
```

```
SPEAKER SETUP              P M

>NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0   + 2.5   - 1.5
 SIZE             |
 DELAY L SURR   SUB    R SURR
 TRIM   + 1.0   + 0.5
 SOLO           XOVER
        LB SUR   80HZ
          0.0
    STORE 1      RECALL
```

```
SPEAKER SETUP              P M

>NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0   + 2.5   - 1.5
 SIZE   |
 DELAY L SURR   SUB    R SURR
 TRIM   + 1.0    0.0     0.0
 SOLO           XOVER
                          RB SUR
                            0.0
                       ALL 1
```

```
SPEAKER SETUP              P M

>NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0   + 2.5   - 1.5
 SIZE                     |
 DELAY L SURR   SUB    R SURR
 TRIM   + 1.0   + 0.5   + 1.0
 SOLO
```

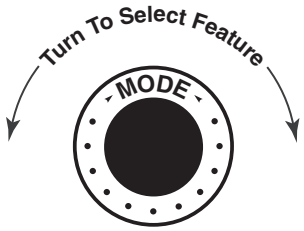
```
SPEAKER SETUP              P M

>NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0   + 2.5   - 1.5
 SIZE
 DELAY L SURR   SUB    R SURR
 TRIM   + 1.0   + 0.5   + 1.0
 SOLO   |       XOVER
        LB SUR   80HZ   RB SUR
        + 3.5             0.0
```

Between LB SUR and RB SUR, the channel selector arrow will rest on XOVER referring to the subwoofer crossover frequency. For speakers set to SMALL, this is the frequency point at which bass information is redirected to the subwoofer. The typical THX setting is 80 Hz. If the SMALL speakers in your system have a different crossover frequency, set it here.

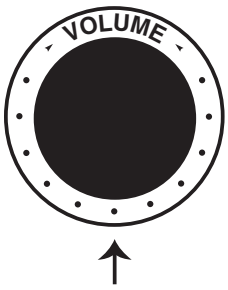
```
SPEAKER SETUP              P M

>NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0   + 2.5   - 1.5
 SIZE
 DELAY L SURR   SUB    R SURR
 TRIM   + 1.0   + 0.5   + 1.0
 SOLO          >XOVER
        LB SUR   70HZ   RB SUR
        + 3.5             0.0
    STORE 1      RECALL 1
```

```
SPEAKER SETUP              P M

>NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0   + 2.5   - 1.5
 SIZE
 DELAY L SURR   SUB    R SURR
 TRIM*  + 1.0   + 0.5   + 1.0
 SOLO           XOVER   |
        LB SUR   70HZ   RB SUR
        + 3.5             + 3.0
    STORE 1      RECALL 1
```

HOME THEATER SETUP • BALANCE STORE



To store a Balance Preset, which will contain both channel (speaker) delays and levels, turn the Mode knob until the arrow is on STORE 1.



Turn the Volume knob to select one of the four Balance Preset numbers and then press the Volume knob to store the preset. The display will confirm the action by reading STORED and the Balance Preset number.

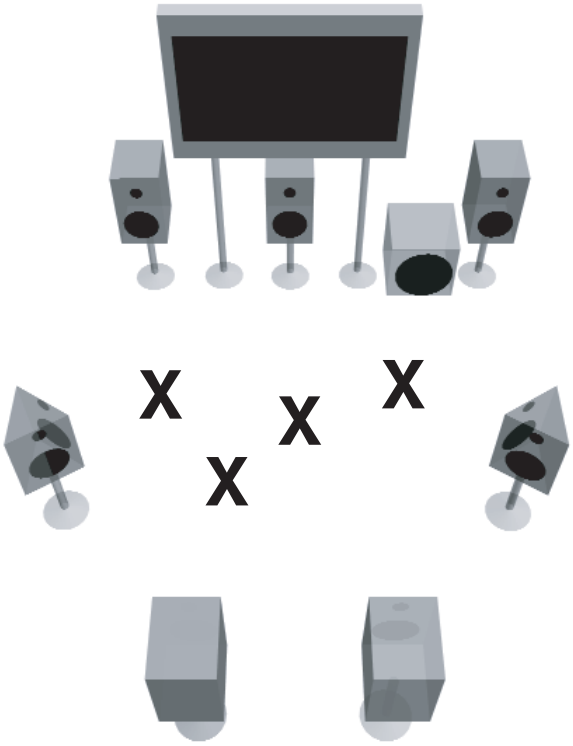
Each home theater environment is unique and typically offers more than one frequented seating position. While optimizing sound (delay and levels) around a singular position will greatly improve sound in the entire theater, the HTR-2400 makes it possible to create four “hot spots” rather than just one. This will require that you recalibrate both the Delay settings and Speaker Levels for the other seating positions in your home theater.

```
SPEAKER SETUP            P M

 NOISE* LEFT  CENTER  RIGHT
 SEQ    + 4.0  + 2.5  - 1.5
 SIZE
 DELAY L SURR  SUB   R SURR
 TRIM* + 1.0  + 0.5  + 1.0
 SOLO         XOVER  |
       LB SUR  70HZ  RB SUR
       + 3.5         + 3.0
  >STORE 2     RECALL 1
```

```
SPEAKER SETUP            P M

 NOISE* LEFT  CENTER  RIGHT
 SEQ    + 4.0  + 2.5  - 1.5
 SIZE
 DELAY L SURR  SUB   R SURR
 TRIM* + 1.0  + 0.5  + 1.0
 SOLO         XOVER  |
       LB SUR  70HZ  RB SUR
       + 3.5         + 3.0
  >STORED 2    RECALL 1
```

```
SPEAKER SETUP            P M

 NOISE* LEFT  CENTER  RIGHT
 SEQ    + 4.0  + 2.5  - 1.5
 SIZE
 DELAY L SURR  SUB   R SURR
 TRIM* + 1.0  + 0.5  + 1.0
 SOLO         XOVER  |
       LB SUR  70HZ  RB SUR
       + 3.5         + 3.0
  >STORE 1     RECALL 1
```

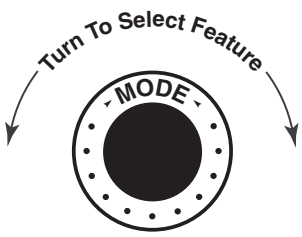
```
SPEAKER SETUP            P M

 NOISE* LEFT  CENTER  RIGHT
 SEQ    + 4.0  + 2.5  - 1.5
 SIZE
 DELAY L SURR  SUB   R SURR
 TRIM* + 1.0  + 0.5  + 1.0
 SOLO         XOVER  |
       LB SUR  70HZ  RB SUR
       + 3.5         + 3.0
  >STORED 1    RECALL 1
```



Repeat both the Delay and Speaker Level procedures and save the new levels under another Balance Preset number.

While you can Recall a Balance Preset from this setup page, the end user can also Recall a Balance Preset from the Home Theater Zone page.

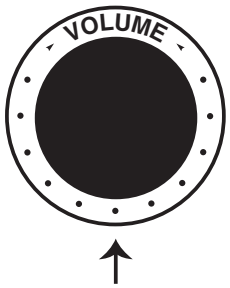
HOME THEATER SETUP • BALANCE RECALL



To recall a Balance Preset, which will contain both channel (speaker) delays and levels, turn the Mode knob until the arrow is on RECALL.

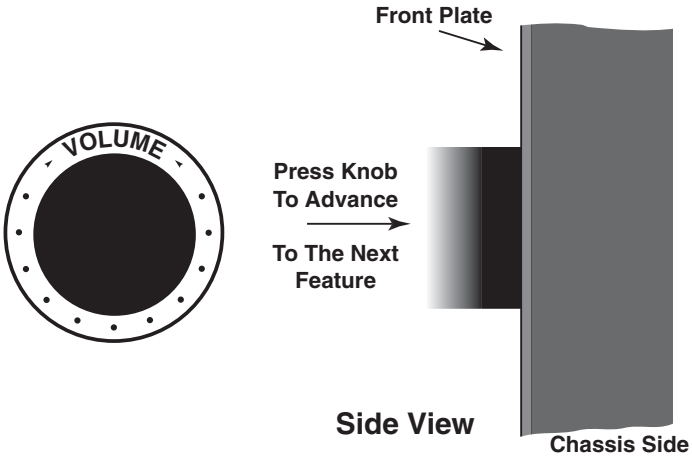
```
SPEAKER SETUP              P M

 NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0  + 2.5    - 1.5
 SIZE
 DELAY L SURR   SUB     R SURR
 TRIM* + 1.0   + 0.5    + 1.0
 SOLO          XOVER    |
       LB SUR   70HZ    RB SUR
       + 3.5            + 3.0
   STORED 2    >RECALL 1
```

Then use the Volume knob to select the Balance Preset number you wish to recall and press the Volume knob.




```
SPEAKER SETUP              P M

 NOISE* LEFT   CENTER   RIGHT
 SEQ    + 4.0  + 2.5    - 1.5
 SIZE
 DELAY L SURR   SUB     R SURR
 TRIM* + 1.0   + 0.5    + 1.0
 SOLO          XOVER    |
       LB SUR   70HZ    RB SUR
       + 3.5            + 3.0
   STORED 2    >RECALLED 1
```

To recall a Balance Preset from the Theater Zone Page, press the Volume knob.




```
THEATER ZONE   VOL -41.5 DB

 DVD PLAYER 7

 PLIIx MOVIE

 BASS + 3.0DB  TONE RECALL 1
 TREB + 3.0DB  BAL  RECALL 1
 IN   2.0.0.0  VOL  RECALL 1
 OUT  3.2.1.2  D NRM    0 DB
      JAN  1   12:01 AM
```

A * (cursor) will appear next to the word BASS. Repeatedly press the Volume knob to advance the cursor to the word BAL RECALL.

To recall a Balance Preset from this page, simply turn the Volume knob.

```
THEATER ZONE   VOL -41.5 DB

 DVD PLAYER 7

 PLIIx MOVIE

*BASS + 3.0DB
 TREB + 3.0DB
 IN   2.0.0.0
 OUT  3.2.1.2
      JAN  1
```

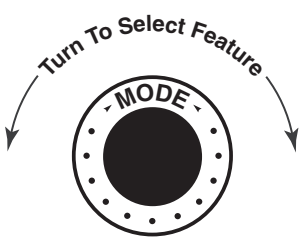
```
THEATER ZONE   VOL -41.5 DB

 DVD PLAYER 7

 PLIIx MOVIE

 BASS + 4.0DB  T RECALLED 2
 TREB + 3.0DB *BAL RECALL 1
 IN   2.0.0.0  VOL RECALL 1
 OUT  3.2.1.2  D NRM    0 DB
      JAN  1   12:01 AM
```

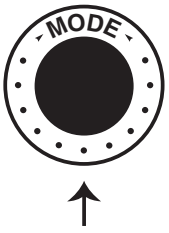
The recall of the Balance Preset is automatic and no other functions need to be performed.

Note that Storing of a Balance Preset can only be done inside the setup mode.

HOME THEATER SETUP • VOLUME PRESETS

If you are still in the Speaker Setup menu, turn the Mode knob so that the arrow is on the letter P (previous screen) and press the Mode knob.





Press Mode To Enter

```
SPEAKER SETUP          <P M

 NOISE* LEFT  CENTER  RIGHT
 SEQ    + 4.0  + 2.5  - 1.5
 SIZE
 DELAY L SURR  SUB   R SURR
 TRIM* + 1.0  + 0.5  + 1.0
 SOLO         XOVER  |
       LB SUR  70HZ  RB SUR
       + 3.5         + 3.0
   STORE 1     RECALL 1
```

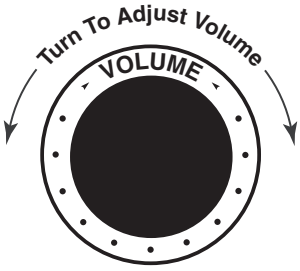
Again, turn the Mode knob to advance the arrow to the HT Global option and press the Mode knob.

The HT Global Page will display with the top line arrow indicating the current volume level.

```
HT MAIN SETUP MENU     P M

>HT SPEAKER
 HT SOURCE
 HT GLOBAL
```

```
HT MAIN SETUP MENU     P M

 HT SPEAKER
 HT SOURCE
>HT GLOBAL
 HT TONE
 HT PROLOGIC IIx
 HT INFORMATION
```

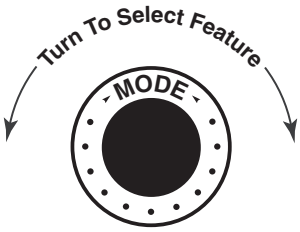
```
HT GLOBAL SETUP          P M
>CURRENT VOLUME=VOL -25.0 DB
 VOLUME PRESET STORE  1
 VOLUME PRESET RECALL 1
 TURN ON VOLUME=VOL  LASTUSE
 MAXIMUM VOLUME=MAX +10.0 DB
 FINAL INPUT   =FINAL INP 20
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RECALL  YES
```



While the arrow is on Current Volume, use the Volume knob to adjust the volume to a desired level.

Turn the Mode knob to advance the arrow to Volume Preset Store.

```
HT GLOBAL SETUP          P M
>CURRENT VOLUME=VOL -29.0 DB
 VOLUME PRESET STORE  1
 VOLUME PRESET RECALL 1
 TURN ON VOLUME=VOL  LASTUSE
 MAXIMUM VOLUME=MAX +10.0 DB
 FINAL INPUT   =FINAL INP 20
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RECALL  YES
 FACTORY DEFAULT RECALL  YES
 NEW DSP FIRMWARE UPLOAD YES
```

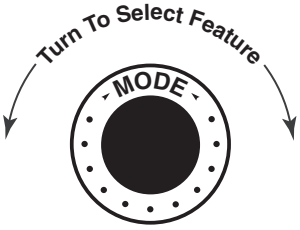



```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -29.0 DB
>VOLUME PRESET STORE  2
 VOLUME PRESET RECALL 1
 TURN ON VOLUME=VOL  LASTUSE
 MAXIMUM VOLUME=MAX +10.0 DB
 FINAL INPUT   =FINAL INP 20
 INST
 INST
 FACT
 NEW
```

Turn the Volume knob to select a Volume Preset number and then press the Volume knob to store the Current Volume as a Preset.

```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -29.0 DB
>VOLUME PRESET STORED 2
 VOLUME PRESET RECALL 1
 TURN ON VOLUME=VOL  LASTUSE
 MAXIMUM VOLUME=MAX +10.0 DB
 FINAL INPUT   =FINAL INP 20
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RECALL  YES
 FACTORY DEFAULT RECALL  YES
 NEW DSP FIRMWARE UPLOAD YES
```

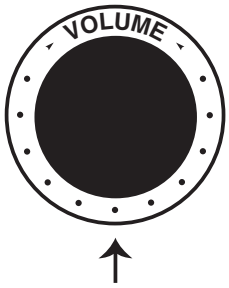
Press Volume To Store



To test your Volume Presets by Recalling them, turn the Mode knob so that the arrow is on Volume Preset Recall.

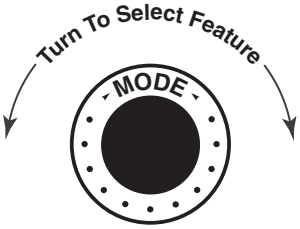
```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -29.0 DB
 VOLUME PRESET STORED 2
>VOLUME PRESET RECALL 1
 TURN ON VOLUME=VOL  LASTUSE
 MAXIMUM VOLUME=MAX +10.0 DB
 FINAL INPUT   =FINAL INP 20
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RECALL  YES
 FACTORY DEFAULT RECALL  YES
 NEW DSP FIRMWARE UPLOAD YES
```

Turn the Volume knob to select the preset you wish to recall. Then press the Volume knob. Repeat this to store up to four Volume Presets.



Press Volume To Recall

```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -39.0 DB
 VOLUME PRESET STORED 2
>VOLUME PRESET RECALLED 3
 TURN ON VOLUME=VOL  LASTUSE
 MAXIMUM VOLUME=MAX +10.0 DB
 FINAL INPUT   =FINAL INP 20
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RECALL  YES
 FACTORY DEFAULT RECALL  YES
 NEW DSP FIRMWARE UPLOAD YES
```

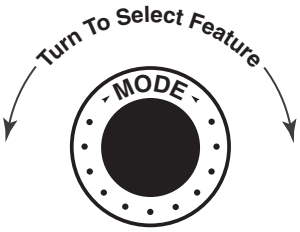



```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -39.0 DB
 VOLUME PRESET STORED 2
 VOLUME PRESET RECALLED 3
>TURN ON VOLUME=VOL  LASTUSE
 MAXIMUM VOLUME=MAX +10.0 DB
 FINAL INPUT   =FINAL INP 20
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RE
 FACTORY DEFAULT RE
 NEW DSP FIRMWARE U
```

To make certain that the theater always turns on at the proper volume level, turn the Mode knob until the arrow is on Turn On Volume.

Turn the Volume knob to select a turn on level from one of the four Volume Presets or the option of Last Used.

```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -39.0 DB
 VOLUME PRESET STORED 2
 VOLUME PRESET RECALLED 3
>TURN ON VOLUME=VOL  RECALL1
 MAXIMUM VOLUME=MAX +10.0 DB
 FINAL INPUT   =FINAL INP 20
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RECALL  YES
 FACTORY DEFAULT RECALL  YES
 NEW DSP FIRMWARE UPLOAD YES
```




```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -39.0 DB
 VOLUME PRESET STORED 2
 VOLUME PRESET RECALLED 3
 TURN ON VOLUME=VOL  RECALL1
>MAXIMUM VOLUME=MAX +10.0 DB
 FINAL INPUT   =FINAL INP 20
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RE
 FACTORY DEFAULT RE
 NEW DSP FIRMWARE U
```

To make certain that the theater's volume level never exceeds the point of distortion, set a Maximum Volume Level for the Theater Zone.

Turn the Mode knob so that the arrow is on Maximum Volume and then use the Volume knob to set this level.

```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -39.0 DB
 VOLUME PRESET STORED 2
 VOLUME PRESET RECALLED 3
 TURN ON VOLUME=VOL  RECALL1
>MAXIMUM VOLUME=MAX +29.5 DB
 FINAL INPUT   =FINAL INP 20
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RECALL  YES
 FACTORY DEFAULT RECALL  YES
 NEW DSP FIRMWARE UPLOAD YES
```

HOME THEATER SETUP • FINAL INPUT

The HTR-2400 is essentially two systems in one: 1) An eight zone multi-room system with up to eight source components, 2) A home theater zone that can play the eight multi-room system's sources plus additional sources specific to only the theater zone.

In respect to source selection, the home theater is independent of the rest of the house. One can select to share all of the house sources with the theater or share just a few (or none), along with the theater specific sources.

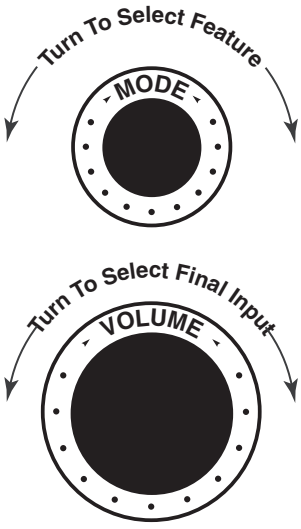
ADA provides up twenty "Input Labels" for the theater zone. The first eight mirror the house sources while the remaining twelve input labels are for other devices. The grid to the right shows ADA's factory default source names for both the home and theater.

INPUT #	MULTI-ROOM NAME	HOME THEATER NAME
1	XM TUNER 1	XM TUNER 1
2	FM TUNER 2	FM TUNER 2
3	CD PLAYER 3	CD PLAYER 3
4	CD LIBRARY 4	CD LIBRARY 4
5	SATELLITE 5	SATELLITE 5
6	CABLE BOX 6	CABLE BOX 6
7	DVD PLAYER 7	DVD PLAYER 7
8	AUXILIARY 8	AUXILIARY 8
9		VCR 9
10		DVR/PVR 10
11		VIDEOGAME 11
12		CAMCORDER 12
13		COMPUTER 13
14		LASERDISC 14
15		LASRER AC3 15
16		PHONOGRAPH 16
17		SAT RECORD 17
18		TV RECORD 18
19		DVD RECORD 19
20		DVR RECORD 20

While it is possible to connect an additional eight digital audio sources and one multi-channel audio source (SACD or DVD Audio) to the HTR-2400, for a total of nineteen inputs, most typical home theater systems will select from far fewer sources (inputs). Also, in some cases, not all of the eight multi-room inputs will be used.

To make the home theater system easier to use, it is possible to limit the number of sources available in the home theater. This feature is called "Final Input". It is best used in conjunction with the HT Source setup which permits you to relabel the sources for the theater. Final inputs can be added back later as new sources are added to the system.

For example, let's say the multi-room sources do not include an Auxiliary source. The theater accesses all of the seven house sources plus a VCR and a Video Game. That means that theater only uses nine of the potential 20 input source labels. To customize the HTR-2400, you will first need to set the Final Input number to 9 and then relabel a portion of the theater sources in the setup called HT SOURCE. To begin to change the Final Input:



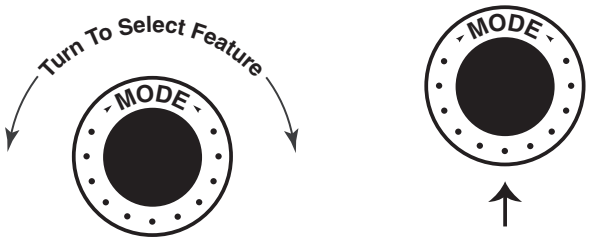
Turn the Mode knob so that the arrow is on FINAL INPUT. Then turn the Volume knob to lower the Final Input number. Note, that if this feature does not permit you to lower the Final Input enough, then chances are that the Theater Zone is currently on a source higher than your final input. Here, you will first need to exit the setup mode and change the Theater's input.

```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -39.0 DB
 VOLUME PRESET STORED 2
 VOLUME PRESET RECALLED 3
 TURN ON VOLUME=VOL  RECALL1
 MAXIMUM VOLUME=MAX +19.5 DB
>FINAL INPUT   =FINAL INP 20
```

```
HT GLOBAL SETUP          P M
 CURRENT VOLUME=VOL -39.0 DB
 VOLUME PRESET STORED 2
 VOLUME PRESET RECALLED 3
 TURN ON VOLUME=VOL  RECALL1
 MAXIMUM VOLUME=MAX +19.5 DB
>FINAL INPUT   =FINAL INP 12
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RECALL  YES
 FACTORY DEFAULT RECALL  YES
 NEW DSP FIRMWARE UPLOAD YES
```

HOME THEATER SETUP • SOURCE SETUP

If you are still in the HT Global Setup menu, turn the Mode knob so that the arrow is on the letter P (previous screen) and press the Mode knob.




```
HT GLOBAL SETUP          <P M
 CURRENT VOLUME=VOL -39.0 DB
 VOLUME PRESET STORED 2
 VOLUME PRESET RECALLED 3
 TURN ON VOLUME=VOL  RECALL1
 MAXIMUM VOLUME=MAX +19.5 DB
 FINAL INPUT   =FINAL INP 12
 INSTALL DEFAULT STORE   YES
 INSTALL DEFAULT RECALL  YES
 FACTORY DEFAULT RECALL  YES
 NEW DSP FIRMWARE UPLOAD YES
```

Again, turn the Mode knob to advance the arrow to the HT Source option and press the Mode knob.

```
HT MAIN SETUP MENU      P M

>HT SPEAKER
 HT SOURCE
 HT
 HT
 HT
 HT
```

```
 HT MAIN SETUP MENU      P M

  HT SPEAKER
 >HT SOURCE
  HT GLOBAL
  HT TONE
  HT PROLOGIC IIx
  HT INFORMATION
```

The HT Source Page will display with the top line arrow indicating what source is being setup.

```
HT SOURCE> 1 SETUP      P M
 SOURCE LABEL  =XM TUNER 1
 AUDIO INPUT   =ANALOG  1
 ANALOG TRIM   =  0.0dB
 COMPOSITE INPT=OFF
 S-VIDEO  INPUT=OFF
 COMPONENT INPT=OFF
 2CH DEFLT MODE=QUAD MODE
 MCH DEFLT MODE=CINEMA EX/ES
 SOURCE CONTROL=TUNER 1 MOD1
 AC OUTLET=----  DC TRIG=ON
```

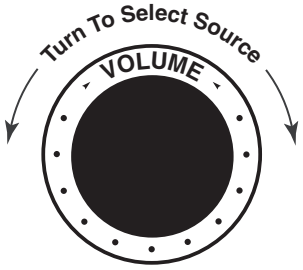
As you turn the Volume knob, you can select among the twenty theater Source Names in the HTR-2400. Even if you set the Final Input to less than Final Input 20, all twenty will still display.

The grid below details the out-of-the-box ADA factory default settings.

INPUT #	SOURCE NAME	AUDIO	VIDEO	S-VIDEO	COMPONENT VIDEO	MULTI CH DEFAULT MODE	2 CH DEFAULT MODE	SOURCE CONTROL	AC OUTLET	
1	XM TUNER 1	ANALOG 1	OFF	OFF	OFF	DD PLIIX MSC	QUAD	TUNER 1/1	NO	ON
2	FM TUNER 2	ANALOG 2	OFF	OFF	OFF	DD PLIIX MSC	QUAD	TUNER 1/2	NO	ON
3	CD PLAYER 3	ANALOG 3	OFF	OFF	OFF	DD PLIIX MSC	QUAD	IRL 1/3	1	ON
4	CD LIBRARY 4	ANALOG 4	OFF	OFF	OFF	DD PLIIX MSC	QUAD	IRL 1/4	2	ON
5	SATELLITE 5	DIGITAL 1	VIDEO 5	S1	C1	CINEMA EX/ES	PLIIX	IRL 1/5	NO	ON
6	CABLE BOX 6	DIGITAL 2	VIDEO 6	S2	C2	CINEMA EX/ES	PLIIX	IRL 1/6	NO	ON
7	DVD PLAYER 7	DIGITAL 3	VIDEO 7	S3	C3	CINEMA EX/ES	PLIIX	IRL 1/7	3	ON
8	AUXILIARY 8	ANALOG 8	VIDEO 8	S4	OFF	CINEMA EX/ES	PLIIX	IRL 1/8	4	ON
9	VCR 9	ANALOG 8	VIDEO 4	S4	OFF	CINEMA EX/ES	PLIIX	IRL 1/2	NO	ON
10	DVR/PVR 10	DIGITAL 4	VIDEO 3	OFF	OFF	CINEMA EX/ES	PLIIX	IRL 1/1	NO	ON
11	VIDEOGAME 11	ANALOG 8	VIDEO 3	OFF	OFF	CINEMA EX/ES	PLIIX	NONE	NO	ON
12	CAMCORDER 12	ANALOG 8	VIDEO 3	OFF	OFF	CINEMA EX/ES	PLIIX	NONE	NO	ON
13	COMPUTER 13	ANALOG 8	VIDEO 3	OFF	OFF	CINEMA EX/ES	PLIIX	NONE	NO	ON
14	LASERDISC 14	DIGITAL 5	VIDEO 2	OFF	OFF	CINEMA EX/ES	PLIIX	NONE	NO	ON
15	LASRER AC3 15	DIGITAL 6	VIDEO 2	OFF	OFF	CINEMA EX/ES	PLIIX	NONE	NO	ON
16	PHONOGRAPH 16	ANALOG 8	OFF	OFF	OFF	DD PLIIX MSC	QUAD	NONE	NO	ON
17	SAT RECORD 17	ANALOG 5	VIDEO 5	S1	C1	CINEMA EX/ES	PLIIX	IRL 1/5	NO	ON
18	TV RECORD 18	ANALOG 6	VIDEO 6	S2	C2	CINEMA EX/ES	PLIIX	IRL 1/6	NO	ON
19	DVD RECORD 19	ANALOG 7	VIDEO 7	S3	C3	CINEMA EX/ES	PLIIX	IRL 1/7	3	ON
20	DVR RECORD 20	ANALOG 8	VIDEO 3	S4	OFF	CINEMA EX/ES	PLIIX	IRL 1/1	NO	ON

Please note, that while the HTR-2400 offers 20 source labels, it is not possible to connect twenty devices to the unit. Even the factory default settings assign the same audio input to multiple labels. The reason for additional labels is a) to permit you to connect a good number of devices without customizing the HTR-2400 and b) the ability to assign more than one source label (input) to the same source component (i.e. an input labeled DVD Film and another input labeled DVD Music. Both access the same DVD Player but the DVD Film input uses cinema oriented Default Modes while the DVD Music input uses music oriented modes).

HOME THEATER SETUP • SOURCE (CONT)



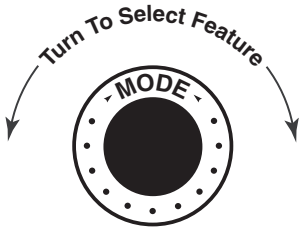
The HT Source page permits you to edit a source's name, A/V jack linkage, analog gain, default modes, source control, AC outlet track and low voltage trigger track. Turn the Volume knob to the select the first device you wish to edit.

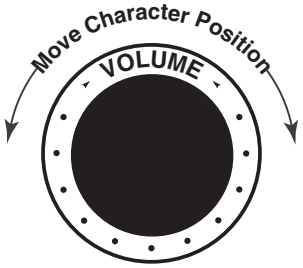
```
HT SOURCE> 1 SETUP      P M
 SOURCE LABEL   =XM TUNER 1
 AUDIO INPUT    =ANALOG  1
```

```
HT SOURCE> 7 SETUP      P M
 SOURCE LABEL   =DVD PLAYER 7
 AUDIO INPUT    =DIGITAL 3
 ANALOG TRIM    =  0.0dB
 COMPOSITE INPT=7
 S-VIDEO  INPUT=3
 COMPONENT INPT=3
 2CH DEFLT MODE=PLIIx
 MCH DEFLT MODE=CINEMA EX/ES
 SOURCE CONTROL=IRL 1 OUT 7
 AC OUTLET=--3-  DC TRIG=ON
```

In the example we have been using, Auxiliary is an open input without a source connected to it. The DVD player is used for both DVD (film) and CD (music) playback. Instead of having the end user worry about which mode to select when playing material on the DVD player, we will setup two Input Labels (or source labels) for the DVD player, each with its own set of default modes (one film and one music oriented). Please note, that this is an example but the steps used here apply to any level of source customization for the HTR-2400's Theater Zone.

Begin by changing the source 7's name from DVD PLAYER 7 to DVD FILM 7. To do this you will turn the Mode knob so the arrow is on SOURCE LABEL. The D in DVD will be flashing. Then turn the Volume knob to advance the blinking cursor to the first letter you intend to edit.



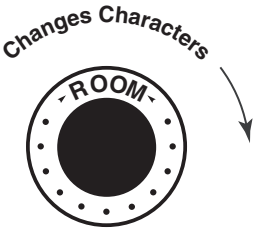



```
HT SOURCE  7 SETUP      P M
>SOURCE LABEL   =DVD PLAYER 7
```

```
HT SOURCE  7 SETUP      P M
>SOURCE LABEL   =DVD PLAYER 7
```

```
HT SOURCE  7 SETUP      P M
>SOURCE LABEL   =DVD FLAYER 7
 AUDIO INPUT    =DIGITAL 3
 ANALOG TRIM    =  0.0dB
 COMPOSITE INPT=7
 S-VIDEO  INPUT=3
 COMPONENT INPT=3
 2CH DEFLT MODE=PLIIx
 MCH DEFLT MODE=CINEMA EX/ES
 SOURCE CONTROL=IRL 1 OUT 7
 AC OUTLET=--3-  DC TRIG=ON
```

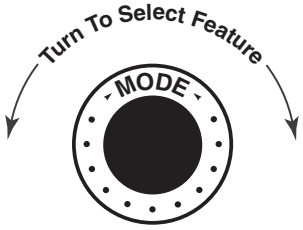
Use the Room knob to change characters, in this case, the letter P to the letter F as in FILM.



Again use the Volume knob to advance to the next letter position.

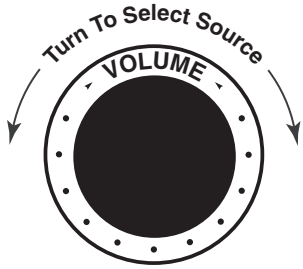
```
HT SOURCE  7 SETUP      P M
>SOURCE LABEL   =DVD FILM  7
 AUDIO INPUT    =DIGITAL 3
 ANALOG TRIM    =  0.0dB
 COMPOSITE INPT=7
 S-VIDEO  INPUT=3
 COMPONENT INPT=3
 2CH DEFLT MODE=PLIIx
 MCH DEFLT MODE=CINEMA EX/ES
 SOURCE CONTROL=IRL 1 OUT 7
 AC OUTLET=--3-  DC TRIG=ON
```

Repeat these steps, turning the Room knob to change letters and the Volume knob to change position, until the source label has been fully renamed to your liking. ADA always suggests leaving the source number in place for future reference.



With source 7 relabeled to read DVD FILM 7, we can now proceed to change source 8, AUXILIARY 8, to read DVD MUSIC 8. Turn the Mode knob so that the arrow is back on the top line on HT SOURCE.

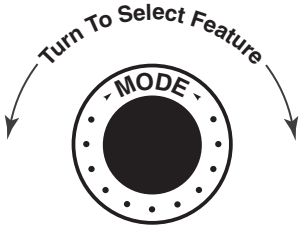
```
HT SOURCE> 7 SETUP     P M
 SOURCE LABEL  =DVD FILM   7
 AUDIO INPUT   =DIGITAL 3
 ANALOG TRIM   =  0.0dB
 COMPOSITE INPT=7
 S-VIDEO  INPUT=3
 COMPONENT INPT=3
 2CH DEFLT MODE=PLIIx
 MCH DEFLT MODE=CINEMA EX/ES
 SOURCE CONTROL=IRL 1 OUT 7
 AC OUTLET=--3-  DC TRIG=ON
```



Then turn the Volume knob so that the number 8 SETUP appears next to HT SOURCE. Note that the source's parameters now display the factory default information for source 8, Auxiliary.

```
HT SOURCE> 8 SETUP     P M
 SOURCE LABEL  =AUXILIARY 8
 AUDIO INPUT   =ANALOG  8
 ANALOG TRIM   =  0.0dB
 COMPOSITE INPT=8
 S-VIDEO  INPUT=4
 COMPONENT INPT=OFF
 2CH DEFLT MODE=PLIIx
 MCH DEFLT MODE=CINEMA EX/ES
 SOURCE CONTROL=IRL 1 OUT 8
 AC OUTLET=---4  DC TRIG=ON
```

Repeating the steps used to relabel DVD FILM 7, use the mode knob to advance to SOURCE LABELS.

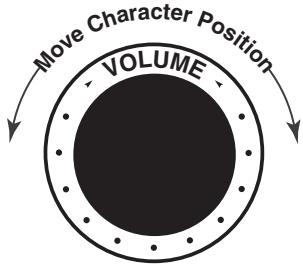



```
HT SOURCE  8 SETUP     P M
>SOURCE LABEL  =AUXILIARY 8
```

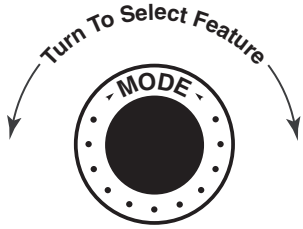
```
HT SOURCE  8 SETUP     P M
>SOURCE LABEL  =DUXILIARY 8
```

```
HT SOURCE  8 SETUP     P M
>SOURCE LABEL  =DVXILIARY 8
```

Use the Volume knob to move the character cursor & the Room knob to change letters.

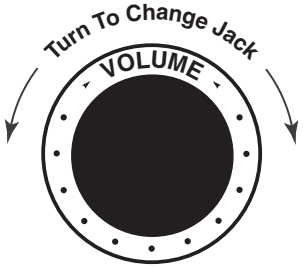


```
HT SOURCE  8 SETUP     P M
>SOURCE LABEL  =DVD MUSIC 8
 AUDIO INPUT   =ANALOG  8
 ANALOG TRIM   =  0.0dB
 COMPOSITE INPT=8
 S-VIDEO  INPUT=4
 COMPONENT INPT=OFF
 2CH DEFLT MODE=PLIIx
 MCH DEFLT MODE=CINEMA EX/ES
 SOURCE CONTROL=IRL 1 OUT 8
 AC OUTLET=---4  DC TRIG=ON
```



With the input renamed DVD MUSIC 8, we can now proceed to link all of the A/V jacks for this input label to match that of the source DVD FILM 7. Turn the Mode knob to advance to Audio Input.

```
HT SOURCE  8 SETUP     P M
 SOURCE LABEL  =DVD MUSIC 8
>AUDIO INPUT   =ANALOG  8
 ANALOG TRIM   =  0.0dB
 COMPOSITE INPT=8
 S-VIDEO  INPUT=4
 COMPONENT INPT=OFF
 2CH DEFLT MODE=PLIIx
 MCH DEFLT MODE=CINEMA EX/ES
```

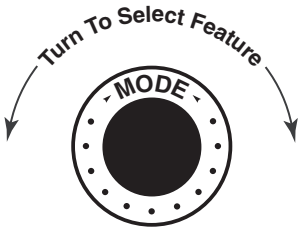


Since the DVD Player is plugged into the HTR-2400's Digital 3 input, Turn the Volume knob to Digital 3.

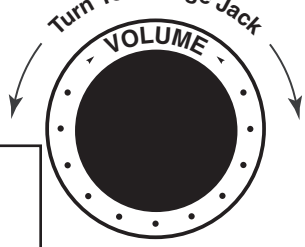
```
HT SOURCE  8 SETUP     P M
 SOURCE LABEL  =DVD MUSIC 8
>AUDIO INPUT   =DIGITAL 3
 ANALOG TRIM   =  0.0dB
 COMPOSITE INPT=8
 S-VIDEO  INPUT=4
 COMPONENT INPT=OFF
 2CH DEFLT MODE=PLIIx
 MCH DEFLT MODE=CINEMA EX/ES
 SOURCE CONTROL=IRL 1 OUT 8
 AC OUTLET=---4  DC TRIG=ON
```

HOME THEATER SETUP • SOURCE (CONT)

```
HT SOURCE  8 SETUP     P M
 SOURCE LABEL  =DVD MUSIC 8
 AUDIO INPUT   =DIGITAL 3
 ANALOG TRIM   =  0.0dB
>COMPOSITE INPT=7
 S-VIDEO  INPUT=4
 COMPONENT INPT=OFF
```



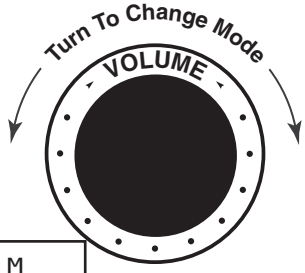
Continue linking the A/V connectors to the DVD MUSIC 8 source label by turning the Mode knob so that Composite Input is selected. The DVD player is connected to the Composite Video 7 Input so turn the Volume knob until this jack is displayed.



Repeat these steps for S-Video and Component Video as well.

The HTR-2400 is specifically designed to permit you to maximize the source inputs and customize them to your particular installation.

The HTR-2400 features ADA's proprietary Double-Default Mode Auto-Detection circuit. Every time the source is selected, a predetermined mode engages for either 2 channel or Multi-Channel (5.1/7.1) playback.



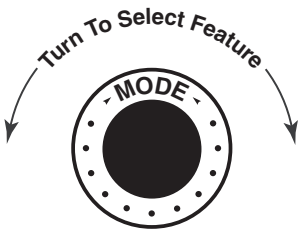
To select a Default Mode, turn the Mode knob to advance to the next option and use the Volume knob to select the desired go to mode (for the DVD Music source) we have opted for Quad Bypass (2Ch music sources) and PLIIx MSC (for 5.1 music).

The last two features to set involve source transport control and source AC control (if used). Use the Mode knob to advance to these options and again the Volume knob to set them.

```
HT SOURCE  8 SETUP     P M
 SOURCE LABEL  =DVD MUSIC 8
 AUDIO INPUT   =DIGITAL 3
 ANALOG TRIM   =  0.0dB
 COMPOSITE INPT=7
 S-VIDEO  INPUT=3
 COMPONENT INPT=3
 2CH DEFLT MODE=QUAD BYPASS
 MCH DEFLT MODE=DD PLIIX MSC
>SOURCE CONTROL=IRL 1 OUT 7
 AC OUTLET=---4  DC TRIG=ON
```

```
HT SOURCE  8 SETUP     P M
 SOURCE LABEL  =DVD MUSIC 8
 AUDIO INPUT   =DIGITAL 3
 ANALOG TRIM   =  0.0dB
 COMPOSITE INPT=7
 S-VIDEO  INPUT=3
 COMPONENT INPT=3
 2CH DEFLT MODE=QUAD BYPASS
 MCH DEFLT MODE=DD PLIIX MSC
 SOURCE CONTROL=IRL 1 OUT 7
>AC OUTLET=---3  DC TRIG=ON
```

HOME THEATER SETUP • TONE CONTROLS



To access Tone Controls, turn the Mode knob until HT Tone is selected and press the Mode knob.

```
HT MAIN SETUP MENU      P M

>HT SPEAKER
```

```
HT MAIN SETUP MENU      P M

 HT SPEAKER
 HT SOURCE
 HT GLOBAL
>HT TONE
 HT PROLOGIC IIx
 HT INFORMATION
```

The Tone Setup menu is made up of three columns; Speaker Group A, Speaker Group B, and tone adjustments. The Mode knob advances through each feature column by column.

```
HT TONE SETUP              P M

GROUP A B TREB FREQ A    1KHz
 L    >*   TREB LEVELA    0.0
 C     *   BASS FREQ A   10Hz
```

```
HT TONE SETUP              P M

GROUP A B TREB FREQ A    1KHz
 L     *   TREB LEVELA    0.0
 C    >*   BASS FREQ A   10Hz
 R     *   BASS LEVELA    0.0
 LS    *   TREB FREQ B    1KHz
 RS    *   TREB LEVELB    0.0
 LBS   *   BASS FREQ B   10Hz
 RBS   *   BASS LEVELB    0.0
 SUB       STORE 1  RECALL 1
```

Speakers can be part of one group, both groups or neither group. While the arrow is on a speaker turn the Volume knob to make it active or inactive on that group.

```
HT TONE SETUP              P M

GROUP A B TREB FREQ A    1KHz
 L     *   TREB LEVELA    0.0
 C     *   BASS FREQ A   10Hz
 R     *   BASS LEVELA    0.0
 LS    *   TREB FREQ B    1KHz
 RS    *   TREB LEVELB    0.0
 LBS   *   BASS FREQ B   10Hz
 RBS   *   BASS LEVELB    0.0
 SUB    >* STORE 1  RECALL 1
```

When the arrow is on a tone adjustment, use the Volume knob to alter that setting.

```
HT TONE SETUP              P M

GROUP A B TREB FREQ A    1KHz
 L     *  >TREB LEVELA   +1.5
 C     *   BASS FREQ A   10Hz
 R     *   BASS LEVELA    0.0
 LS    *   TREB FREQ B    1KHz
 RS    *   TREB LEVELB    0.0
 LBS   *   BASS FREQ B   10Hz
 RBS   *   BASS LEVELB    0.0
 SUB     * STORE 1  RECALL 1
```

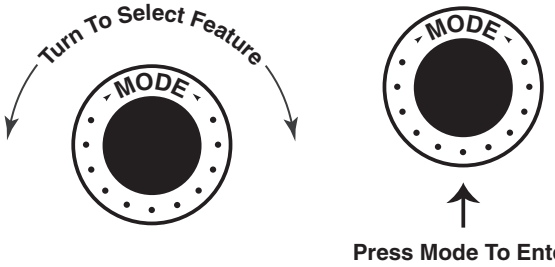
You may opt to include front speakers in one group and surrounds in the other. Alternately, you may just place the subwoofer as the only speaker in both groups and then set one group to 40Hz and the other to 60Hz, giving you a powerful low frequency room correction control.

When you are ready to store speaker groups, tone frequency points and tone levels into a tone preset, turn the Mode knob until the arrow is on the Store #. Turn the Volume knob to select the Tone Preset number and then press the Volume knob to store the preset. This same process is applied to Recalling Tone Presets.

```
HT TONE SETUP              P M

GROUP A B TREB FREQ A    1KHz
 L     *   TREB LEVELA   +1.5
 C     *   BASS FREQ A   10Hz
 R     *   BASS LEVELA    0.0
 LS    *   TREB FREQ B    1KHz
 RS    *   TREB LEVELB    0.0
 LBS   *   BASS FREQ B   10Hz
 RBS   *   BASS LEVELB    0.0
 SUB     *>STORE 1  RECALL 1
```

```
 RBS   *   BASS LEVELB    0.0
 SUB     *>STORED 1 RECALL 1
```

HOME THEATER SETUP • PRO LOGIC IIx



To access Pro Logic IIx setup, turn the Mode knob until HT ProLogic IIx is selected and press the Mode Knob.

```
HT MAIN SETUP MENU      P M

>HT SPEAKER
```

```
HT MAIN SETUP MENU      P M

 HT SPEAKER
 HT SOURCE
 HT GLOBAL
 HT TONE
>HT PROLOGIC IIx
 HT INFORMATION
```

```
HT PROLOGIC IIx SETUP   P M

>PROLOGIC MODE PLIIxCUSTOM1
```

```
HT PROLOGIC IIx SETUP   P M

 PROLOGIC MODE PLIIxCUSTOM1
>CENTER WIDTH 2
```

```
HT PROLOGIC IIx SETUP   P M

 PROLOGIC MODE PLIIxCUSTOM1
 CENTER WIDTH 2
>PANORAMA     ON
```

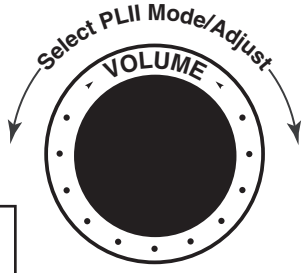
```
HT PROLOGIC IIx SETUP   P M

 PROLOGIC MODE PLIIxCUSTOM1
 CENTER WIDTH 2
 PANORAMA     ON
>DIMENSION    4
```

```
HT PROLOGIC IIx SETUP   P M

 PROLOGIC MODE PLIIxCUSTOM1
 CENTER WIDTH 2
 PANORAMA     ON
 DIMENSION    4
>SUR FILTER   ALL PASS
```

```
HT PROLOGIC IIx SETUP   P M

 PROLOGIC MODE PLIIxCUSTOM1
 CENTER WIDTH 2
 PANORAMA     ON
 DIMENSION    4
 SUR FILTER   ALL PASS
>SUR DELAY    OFF
```

```
HT PROLOGIC IIx SETUP   P M

 PROLOGIC MODE PLIIxCUSTOM1
 CENTER WIDTH 2
 PANORAMA     ON
 DIMENSION    4
 SUR FILTER   ALL PASS
 SUR DELAY    OFF
>RS POLARITY  NORMAL
 MATRIX COEF  0
 AUTO BALANCE OFF
```

The HTR-2400 lets you take full advantage of the benefits of Pro Logic IIx mode control. There are a total of eight PLII modes that can be adjusted including PLII Music, PLIIx Music, and six custom modes. The PLII(x) Music modes only permit adjustment of Center Width (pulling sound from the center channel to the left and right speakers), Panorama (on or off, pulls sound to the surrounds), and Dimension (how much sound goes to the surrounds).



The remaining six custom modes (PLII Custom 1-3 & PLIIx Custom 1-3), permit you control of the Surround Filter, Surround Delay, Right Surround Polarity, Matrix Coefficient, and Auto-Balance. Use the Mode knob to select a feature and the Volume knob to select a ProLogic Mode or adjust a feature.

```
HT PROLOGIC IIx SETUP   P M

 PROLOGIC MODE PLIIxCUSTOM1
 CENTER WIDTH 2
 PANORAMA     ON
 DIMENSION    4
 SUR FILTER   ALL PASS
 SUR DELAY    OFF
 RS POLARITY  NORMAL
>MATRIX COEF  0
 AUTO BALANCE OFF
```

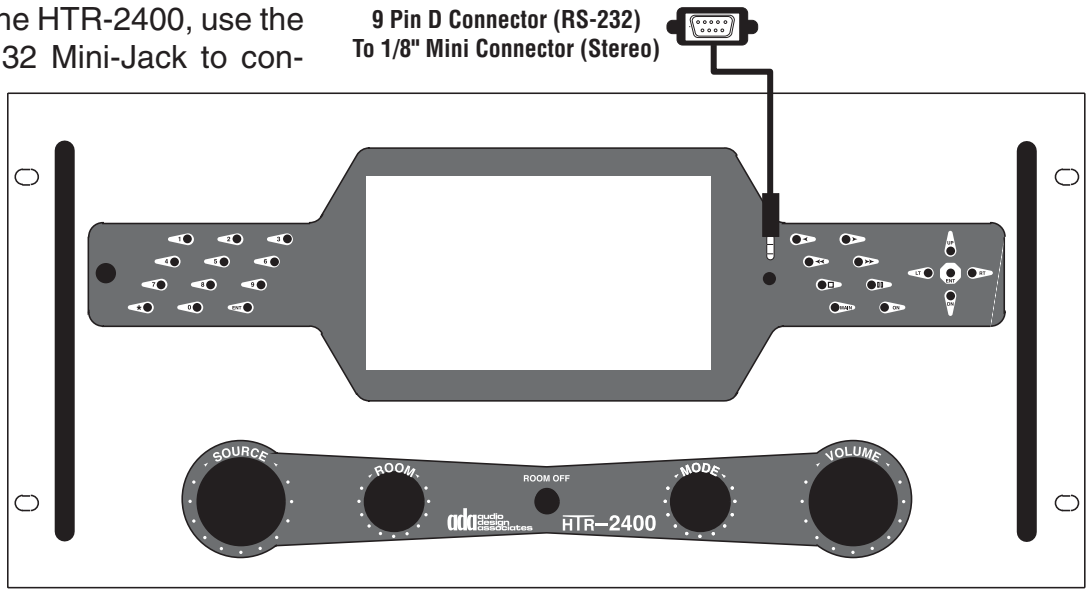
```
  MATRIX COEF  0
 >AUTO BALANCE OFF
```

PC Program Setup - PC Connections

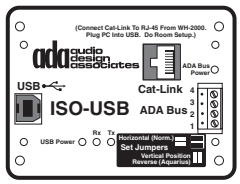
There are several ADA PC Programs that can be used to setup the HTR-2400. These programs mirror the functions available through the HTR-2400. Some features are only programmable via PC, in particular adjustment of the Stereo Enhance and Mono Enhance modes.

ADA suggests using the PC programs whenever possible as they make this setup easier. Also, overall navigation is simplified in the PC program vs. the on-screen setup.

To connect to the HTR-2400, use the provided RS-232 Mini-Jack to connect to the front panel. Note, that the rear-panel RS-232 port is off-line while this connector is inserted.

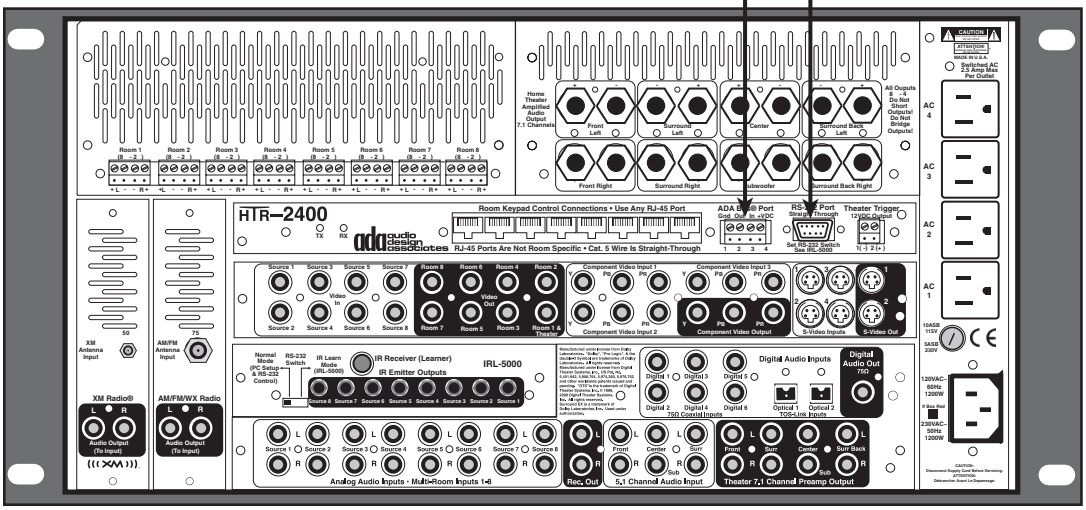


Alternately, you can use the rear-panel RS-232 port. If you prefer, you can also connect an ISO-E (Ethernet) or ISO-USB (USB) to the HTR-2400's rear panel ADA Bus port.

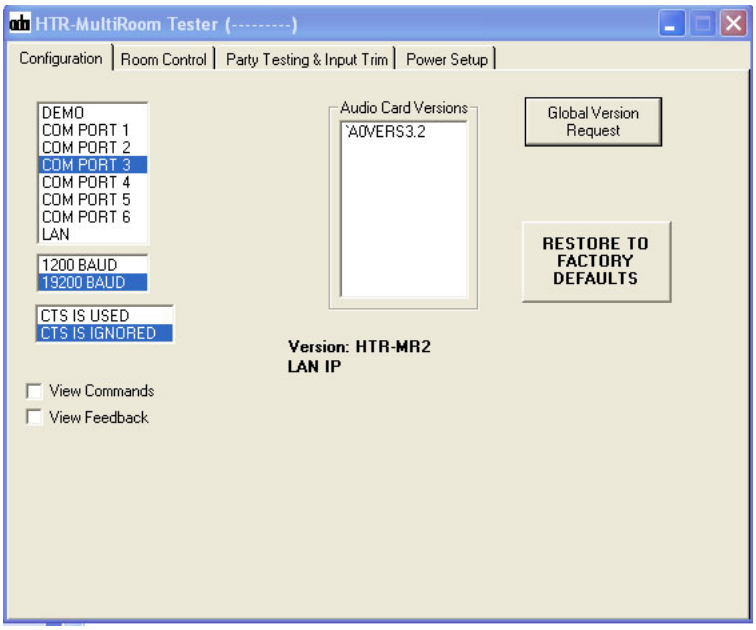


Use the HTR-2400's ADA Bus Jack to either the ISO-E or ISO-USB

Use the HTR-2400's RS-232 Port. When the RS-232 Mini Jack is connected to the HTR-2400's front panel RS-232 jack, this RS-232 port is rendered "off-line." When the front panel mini is removed, this jack is back "on-line."

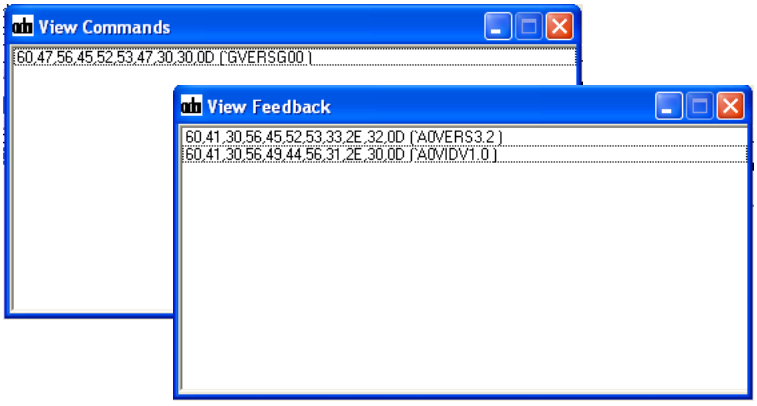


PC Program Setup - Multi-Room



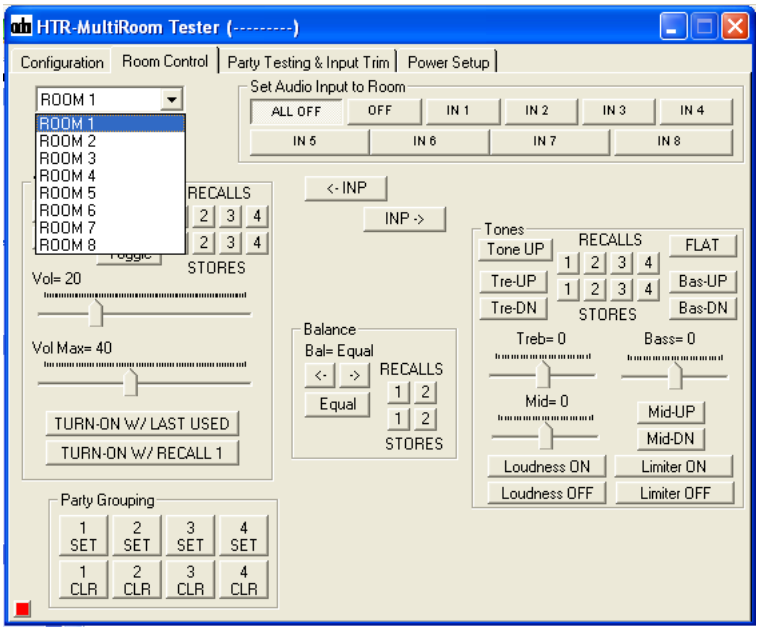
The PC program for the setup of the HTR-2400's Multi-Room system is called HTR-MR#.exe, where the # refers to the version number.

Here you select your Com port. The LAN option is for use with the ISO-E. The HTR-2400 is typically set to 19200 baud and CTS is usually set to Ignored. To verify communication, you can press the **Global Version Request** button. The Audio card version number will appear in the window. This will indicate that communication is established.

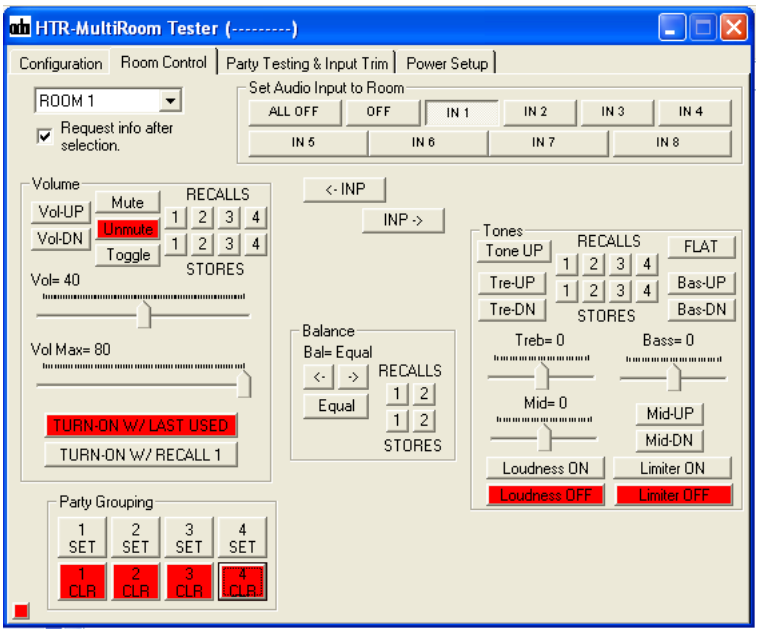


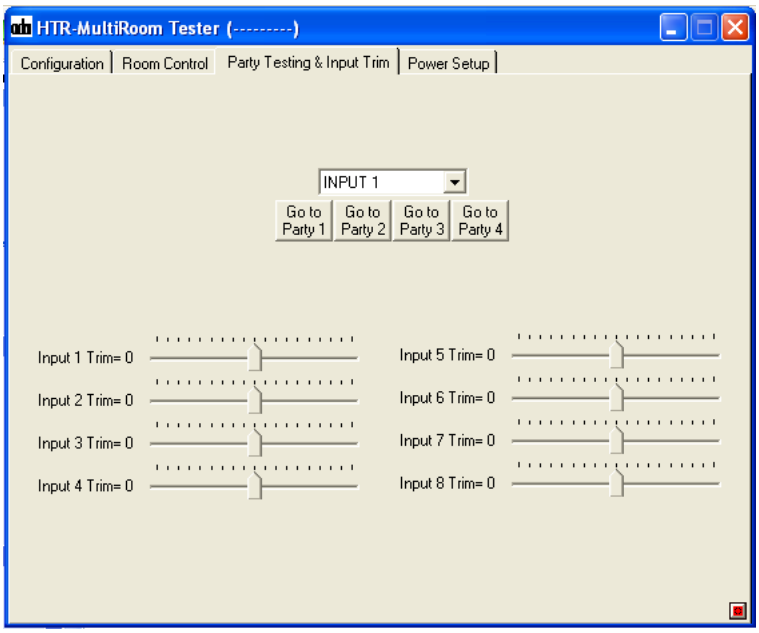
If you need to reset the multi-room system of the HTR-2400, press the **Restore To Factory Defaults** button. This will clear all presets and trim levels.

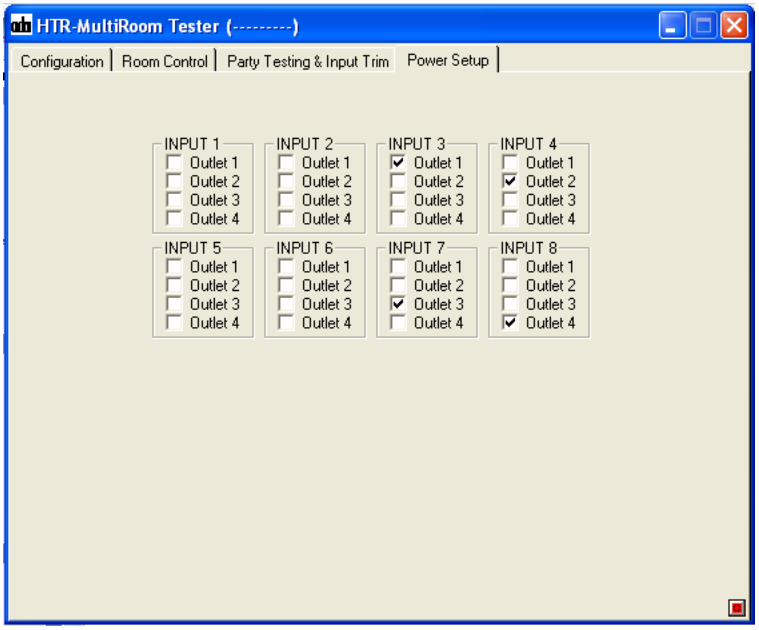
By selecting the **View Commands** and/or **View Feedback** options, separate windows open. These display both Hex and ASCII codes as some ADA components operate on Hex while others, like the Multi-room system of the HTR-2400, operate on ASCII. For those programming other systems for control of the HTR-2400, the ASCII text from the View Command window can be copied and then pasted.



The **Room Control** tab accesses most room specific features. As you change tabs, it may be necessary to request a **Screen Update** by pressing the small red square in the lower left hand corner of the screen. Room 1 is the default room selected. To setup other rooms, pull down on the **Room Selector** window. Either function will cause the screen to update with the room's current state.





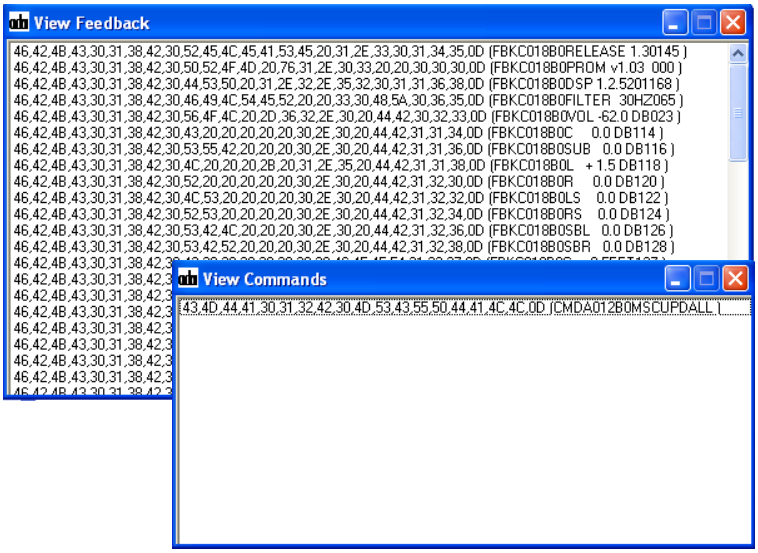


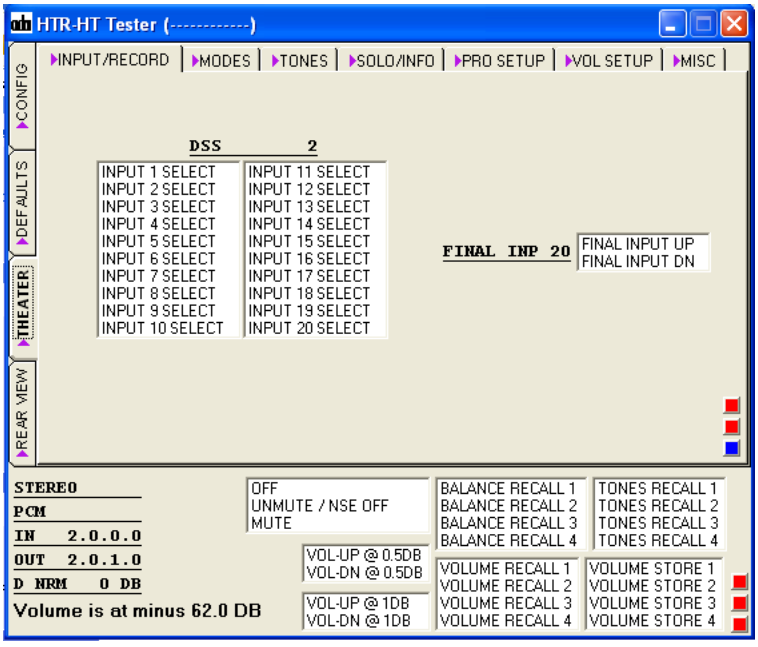
On the **Room Control** tab, you can select **Inputs**, adjust **Volume**, **Bass**, **Treble**, **Midrange**, **Balance**, and **Mute** on or off and **Room Off** or **All Off**. You can also set the **Loudness** and **Limiter** filters on or off. You can also store **Presets** for **Volume**, **Balance** and **Tones** (which include the filter settings). You can also determine whether the room turns on to its **Last Used** acoustical settings or whether it **Turns On with Recall 1** (volume, balance and tone preset 1s). ADA strongly recommends setting a great acoustical level, then storing volume, balance and tone presets 1, and selecting Turn-On w/ Recall 1. Finally, you can set a room's **Maximum Volume Level** as well as have the room track one or several of the four **Party Groups**.

On the **Party Testing & Input Trim** tab, you can set the input trim levels for each of the eight sources. This will permit you to maintain even audio levels while switching inputs. If you want to see the current input trim levels, press the small red square in the lower right corner for a **Screen Update** request. You can test your **Party Groups** by selecting an input from the pull down window and then pressing the desired Party Group button.

The **Power Setup** tab permits you to setup the HTR-2400's four source AC outlets. Here, you assign a source (input) to the appropriate AC outlet. If you have a single source that can be switched via AC and this component has more than one audio output (more than one source on the system), you can have its single AC connection turn on with multiple inputs by checking the same AC outlet for each input. Again, the red square cause the screen to update.

PC Program Setup - Home Theater





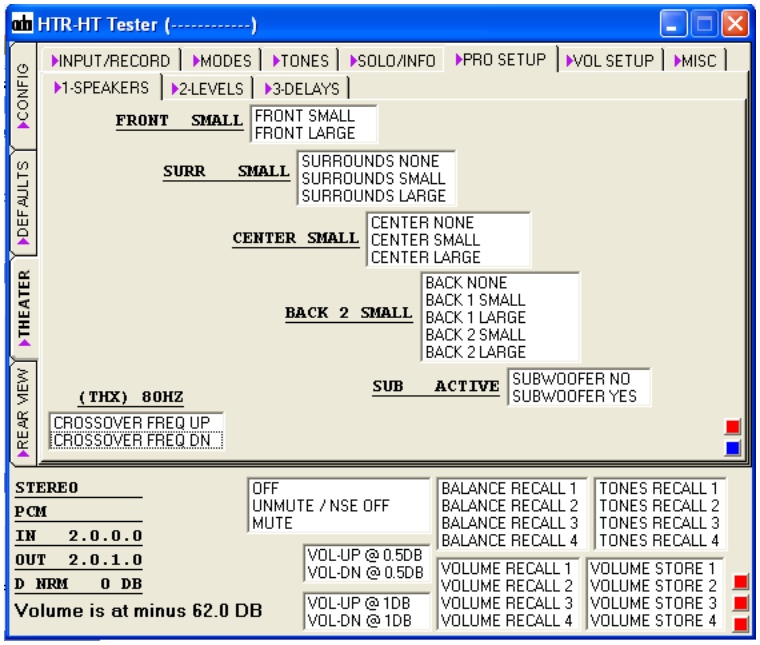
The PC program for the setup of the HTR-2400's Home Theater system is called HTR-HT#.exe, where the # refers to the version number.

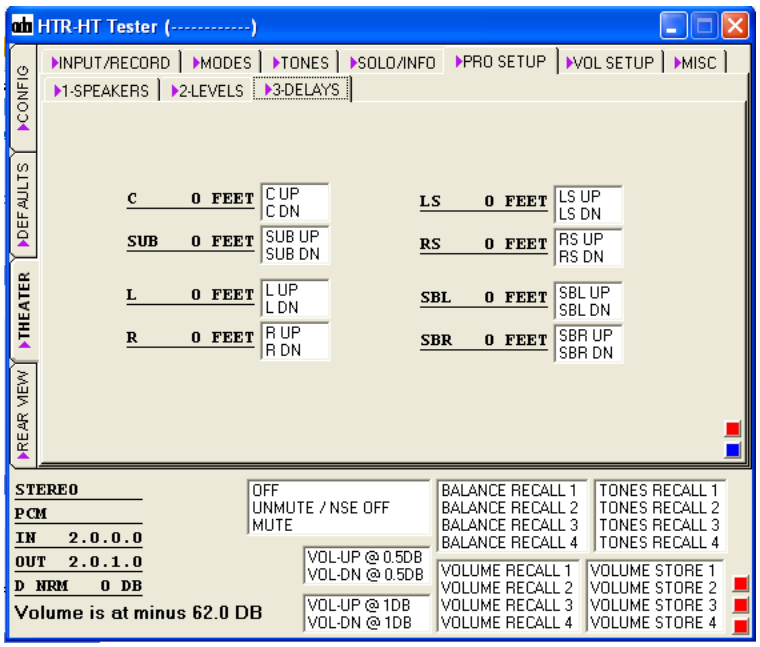
Here you select your Com port. The LAN option is for use with the ISO-E. The HTR-2400 is typically set to 19200 baud and CTS is usually set to Ignored. To verify communication, you can press the either one of the red or blue squares. The blue bar at the top of the screen will display feedback coming in.

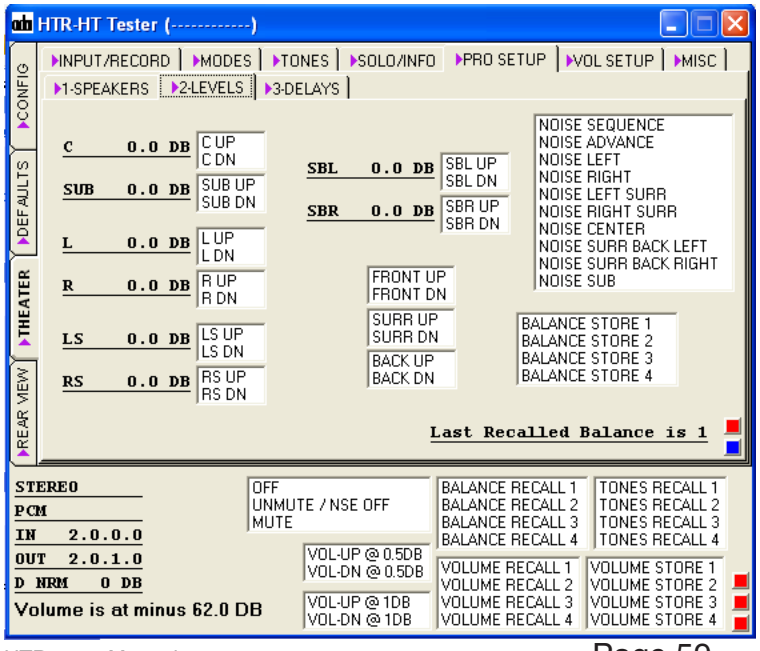
By selecting the **View Commands** and/or **View Feedback** options, separate windows open. These display both Hex and ASCII codes as some ADA components operate on Hex while other. The Home Theater system of the HTR-2400, operate on HEX but the ASCII Code will read the function or feedback. For those programming other systems for control of the HTR-2400, the string from the View Command window can be copied and then pasted.

By selecting the **Theater side tab**, you open on the **Input/Record top tab**. Here you can select inputs and also determine the **Final Input** which is the last input label that can be accessed prior to returning to input 1. This permits you to limit the number of components the theater can access to just the ones that are on the home theater system.

The bottom of the display permits you to recall the four **Volume, Tone,** and **Balance Presets** as well as adjust **Volume Levels** in either continuous **1 dB Steps** or one-shot **.5 dB Steps**. You can also store the four **Volume Presets**, **Mute**, **Unmute,** and turn the theater **Off.**



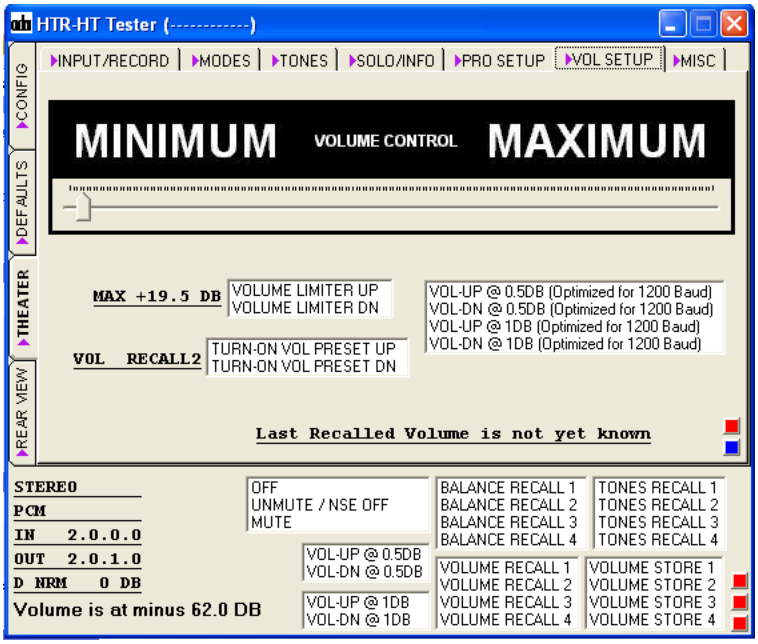


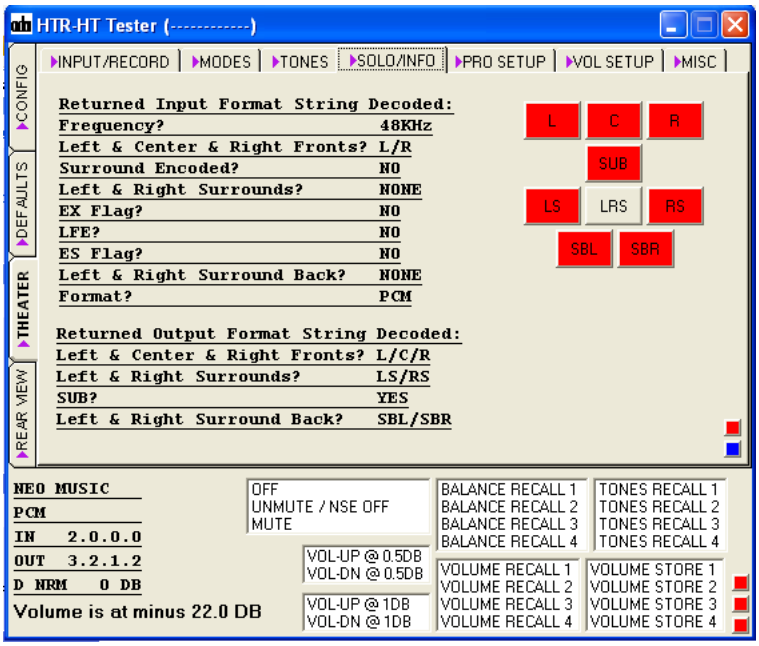


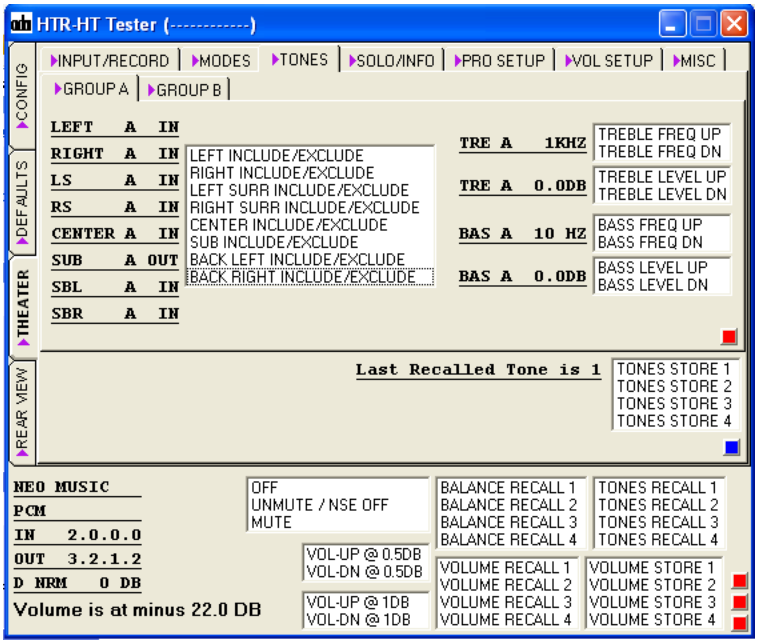
The **Pro Setup top tab** reveals three Pro Setup sub tabs, **1-Speakers, 2-Levels,** and **3-Delays**. In the **1-Speaker sub tab**, you determine the speaker size for your front left and right speakers, center speaker, left and right surround speakers, and the back surround speakers. Here you can determine if you one or two back surrounds and if they are large or small. Please note, you always have surround speakers. The back surround speakers are the optional speakers (for 6.1 & 7.1 surround sound). This is also where you set the subwoofer crossover frequency (80Hz is the THX standard crossover frequency).

The **3-Delays sub tab** permits you to set the delay level for each speaker. Here, the speaker the greatest distance from the seating area is left at 0 Ft delay and will be the reference speaker. All other speakers have their delays set to the difference in distance between them and the reference speaker. Use a measuring tape to determine each speaker's distance. Take the greatest distance and subtract from it each speakers distance. This is that speakers delay value in Ft (33 cm).

The **2-Levels sub tab** lets you set the speaker levels using the HTR-2400's internal pink-noise generator. Here you can select to send Noise to a specific channel and using an SPL meter, raise or lower that channel's level so that the meter is averaging -75 dB (C weighted, Slow setting). You can also raise or lower speakers by group (front, surround and back). Finally, this is where you can store up to four **Balance Presets** which contain both levels and delays. Once one preset is stored repeat these steps for other seating positions in the theater.







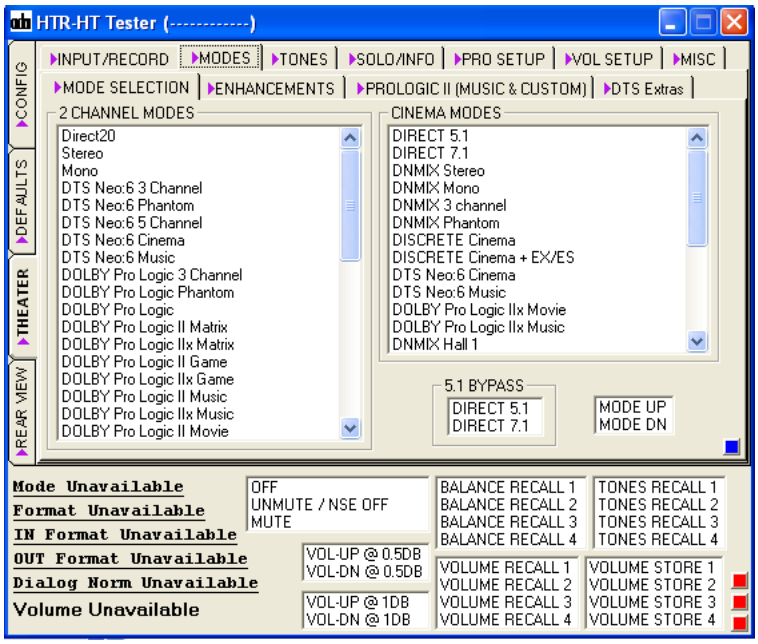
The **Volume Setup top tab** lets you select one of the four volume presets as the theater's **Turn On Volume Preset**. To store a volume preset, press the **Volume Store #**.

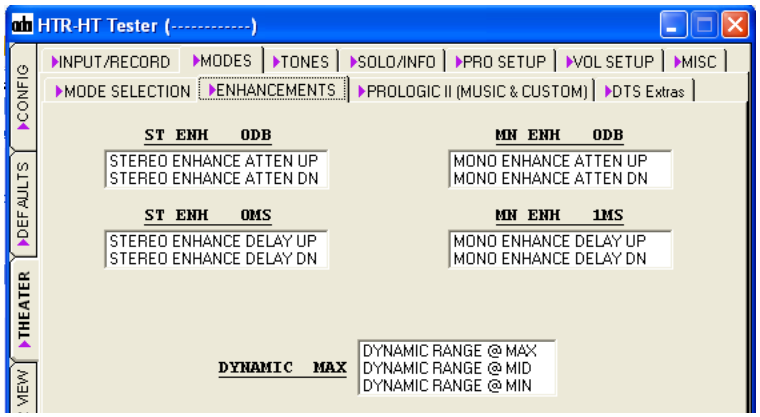
This tab also permits you to raise or lower the theater's volume level by pulling the **Volume Slider**.

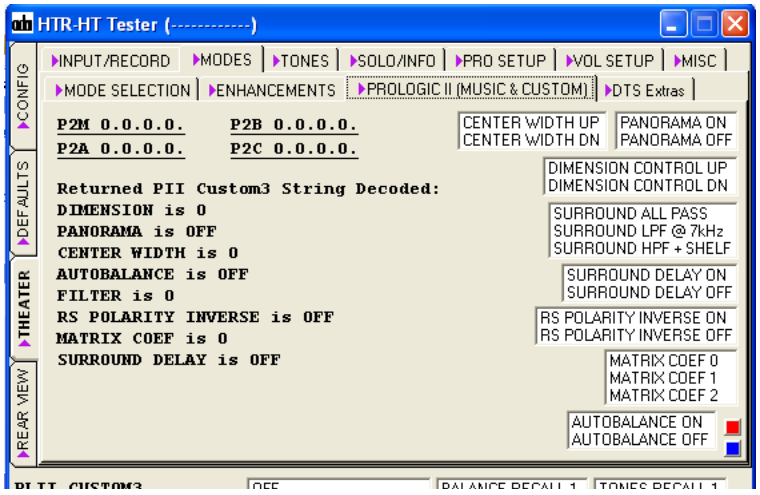
Finally, you can set the theater's **Maximum Volume Level** by adjusting the Volume Limiter up or down. All of these changes take place in real-time.

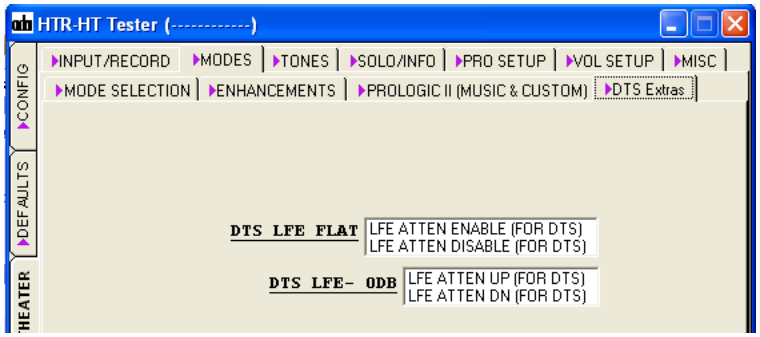
The **Solo/Info top tab** details all the information being worked through the HTR-2400. Here you can also see which speakers are active as the channel buttons will be red. Please note, that modes play a role in which channels are active. Not all modes provide 7.1 playback even if you have set all 7.1 speakers active (during speaker setup). If you want to listen to just one speaker, press that speaker. This is useful to determine if speakers are out phase or if a driver is blown.

The **Tones top tab** reveals two additional tabs **Speaker Group A** and **Speaker Group B**. Each group is its own parametric tone control, where both the frequency point and level can be set for bass and treble. You can select which speakers are in which group or if speakers are in both groups or neither group. For example, front channels might be in one group while surrounds are in another. For better subwoofer control, you might only include the sub in both groups with each group set to a different frequency point (40Hz and 60Hz) allowing you to adjust bass across two frequency points. The four tone presets hold frequencies, levels and speakers per group.







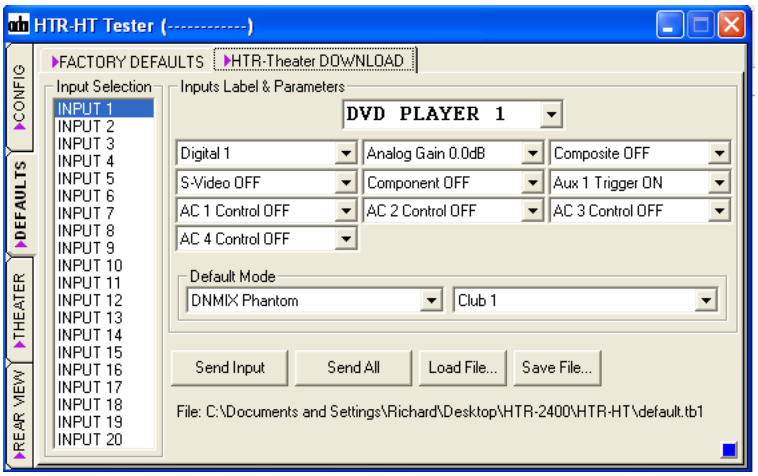


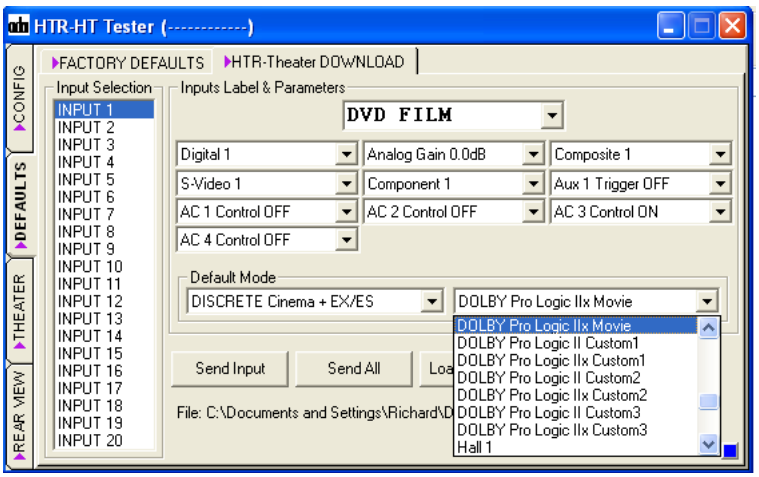
The **Modes top tab** reveals four sub tabs, the first of which is **Mode Selection**. Here you can see how the HTR-2400 breaks modes into two groups, **2-Channel Modes** and **Cinema Modes** (5.1 encoded). If this software is running on an active HTR-2400, only one side of the mode chart will be accessible while the other side is grayed out indicating that these modes are not available. This auto-detect feature is also mirrored on the HTR-2400's front panel as only available modes will appear on the display. The **5.1 Bypass** option is for the DVD Audio (or SACD) multi-channel bypass input.

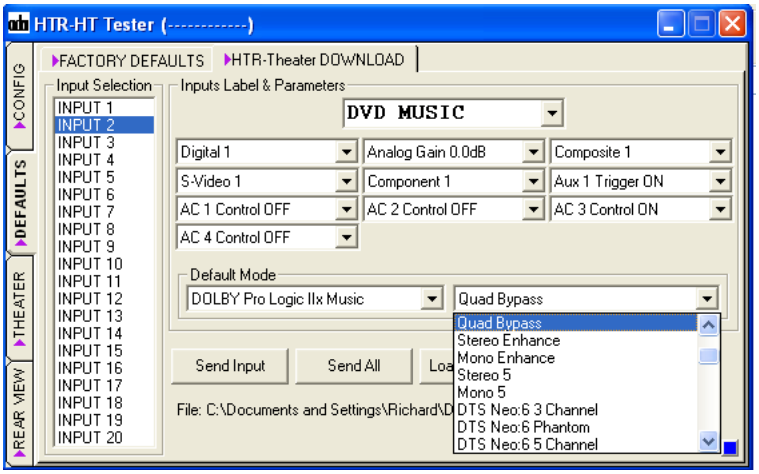
The **Enhancements sub tab** lets you adjust the attenuation level and delay level of two proprietary ADA modes, **Stereo Enhance** and **Mono Enhance** (simulated surround sound from a stereo or mono signal). These features can only be adjusted by using this software. Also, you can alter the **Dynamic Range** which is typically set to Max but for night viewing might be set to Min.

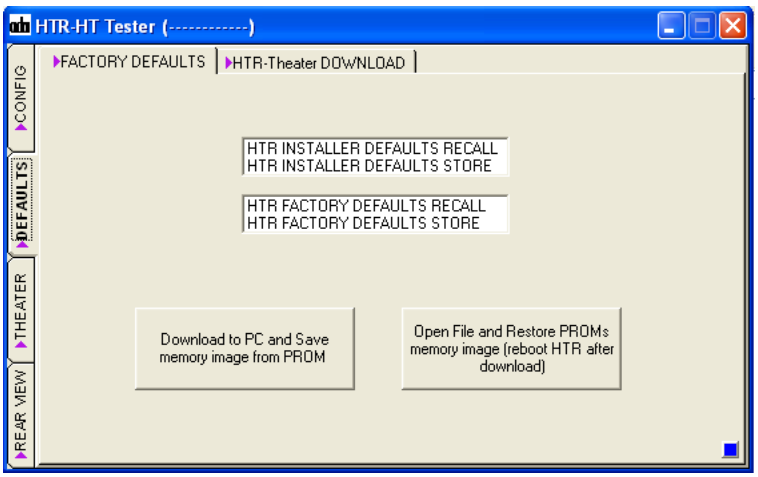
The **Pro Logic II (Music & Custom) sub tab** permits you to customize both the two Pro Logic II Music modes and six Pro Logic II Custom Modes. Where the Music mode only permits adjustment of **Center Width, Panorama,** and **Dimension Control**, the Custom modes permit alteration of all Pro Logic II features. This is a powerful tool that makes it possible to really create great surround sound fields for Pro Logic II.

The **DTS Extras sub tab** allows you to automatically lower the LFE (1-10 dB) whenever a DTS signal is detected. This will permit you to maintain equal bass levels when switching between Dolby & DTS software.









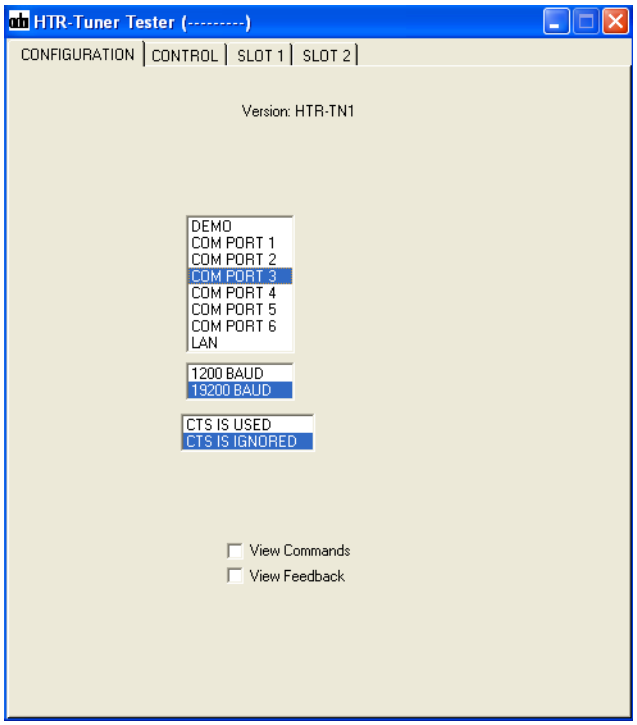
The **Defaults side tab** reveals two top tabs. Here **HTR-Theater Download top tab** permits you to select an input number and customize it to your specific system. If you have already limited the number of inputs for the theater, this is your chance to relabel the remaining inputs, assign the audio and video jacks, turn on the low-voltage trigger if it is being used, assign source AC triggers and setup the Double-Default Mode Auto-Detection (5.1 Cinema Mode-left, 2-Channel Mode-right).

As an example, instead of setting the Final Input number to 11 (the number of components on the system), we have set it to 12. Because the DVD Player is used for both film and music playback (CDs), we are going to setup two inputs for the DVD Player, DVD FILM and DVD MUSIC. The only real differences between these two input labels will be the Default Modes.

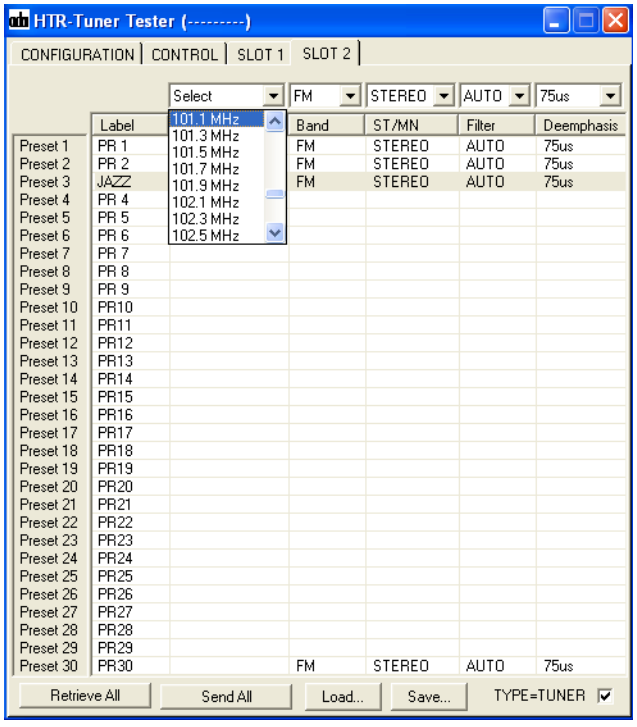
In the screen shot to the left, you can see that input label 2 now reads DVD Music and is linked to the same audio and video jacks as input label 1, DVD Film since these two input labels access the same component. The only differences are the Default Modes, where DVD Film uses film oriented surround modes and DVD Music uses music oriented modes.

The **Factory Defaults top tab** permits you to recall the HTR-2400's factory defaults which will reset the HTR-2400's home theater section to the original settings. Pressing Factory Default Store option will load the current settings as the factory default. The HTR-2400 also features an Installer Default, which can be stored and later recalled by the end user in the event the customer has badly altered the home theater.

PC Program Setup - Tuners



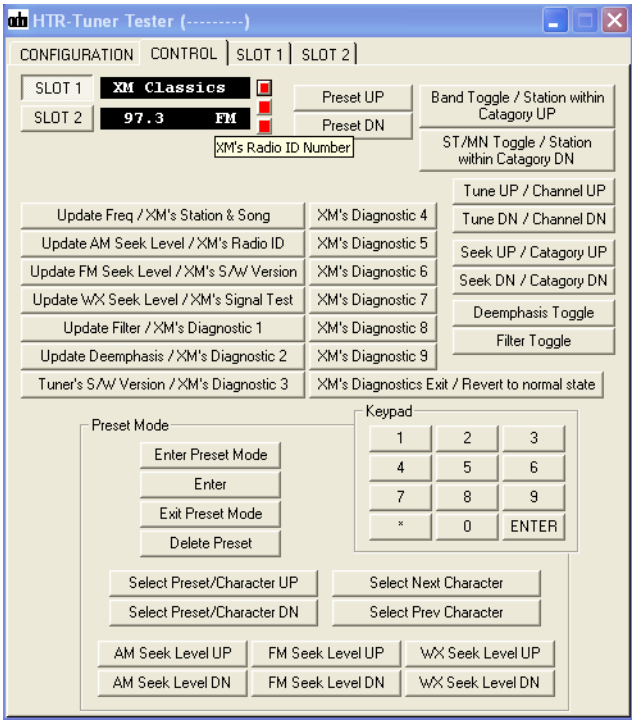
To control a specific tuner, select its **Slot #**. The other buttons on this page will now control the tuner selected. If you have selected the XM Tuner, several of the buttons permit you to determine signal strength as well as signal diagnostics. Again, you can fully control both tuners just as you would from the front panel of the HTR-2400.



The PC program for the setup of the HTR-2400's two Tuners is called HTR-TN#.exe, where the # refers to the version number.

Here you select your Com port. The LAN option is for use with the ISO-E. The HTR-2400 is typically set to 19200 baud and CTS is usually set to Ignored. As with the Multi-Room and Home Theater PC programs, you can select to view commands or feedback by selecting their view option box.

The **Control top tab** reveals the tuner controls and the red squares are update requests.



When you select a **Slot # top tab**, you can pull the existing tuner presets by selecting **Retrieve All**. Now you can select a Tuner Band, select a frequency, and relabel the preset number (i.e. JAZZ, WABC, NEWS, etc.). You can repeat these steps for as many as 30 presets per tuner module. This also permits you to overwrite existing presets or eliminate presets entirely. You can also set a station to stereo or mono (FM only) and adjust filters. The XM tuner only permits entering of preset channel numbers.

You can **save** this tuner file or **load** in previously saved tuner files.

PC Program Setup - IR Learner

The HTR-2400's IR Learner is the IRL-5000 which is programmed via ADA's IRL-3000 software and is somewhat different from the other ADA programs. This program is downloaded as a zipped file. The most common mistake made during installation of the software is that the dealer attempts to run the installer from inside the Winzip window. This will not work. Select all files in the Winzip window and choose extract, targeting your desk top. A folder will appear on your desk top. Open it and then run the installer. Once the installation is complete, you will find a new folder named ADA in your C Drive and in it is a folder called IRL-3000.

ADA strongly suggests following these steps as the IRL is not difficult to program properly but requires you to take the time to do it correctly. Rushing through the IRL setup will waste your time. Also, while the IRL can be loaded at the job site, it is best to do this in your shop where: lighting conditions can be controlled; your gear isn't strewn all over the floor; and you have the time to capture, test, and load the IRL properly. Because the IRL in the HTR is the same as a stand alone IRL-5000, you can use an IRL-5000 to capture and test your commands. Later, you can take the PC to the job site and load the HTR-2400 through its front panel RS-232 port. Either way, follow these steps.

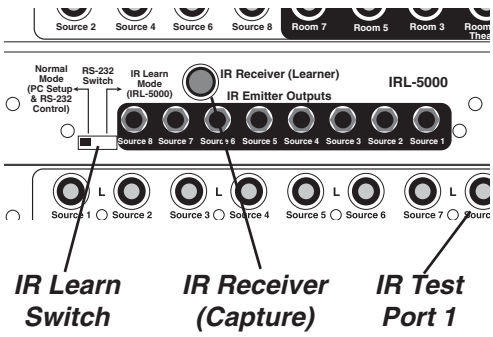
Step 1 - Folder Structure

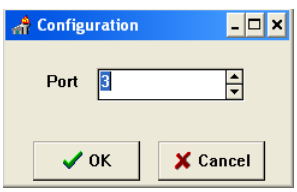
Open the **C Drive**. Then open the **ADA folder**. Then open the **IRL-3000 folder**. Here you will see several files including the **Ir-codes folder**. In the Ir-codes folder create a new folder called Customer as well as a new folder for every make of source gear you need to capture code for. Then open the "manufacturer" folders and create a new folder for each model number. **Please note, you must keep names to only eight characters and avoid using spaces or / in their name.**

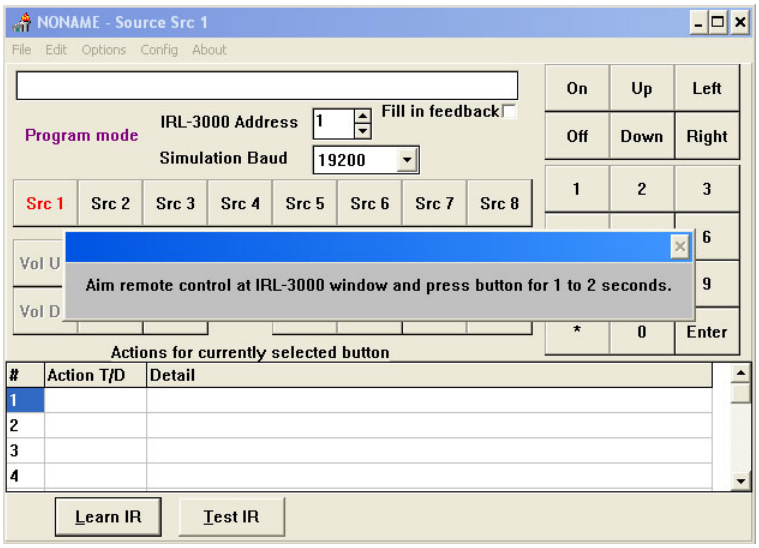
Step 2 - Connection to PC & Opening the Program

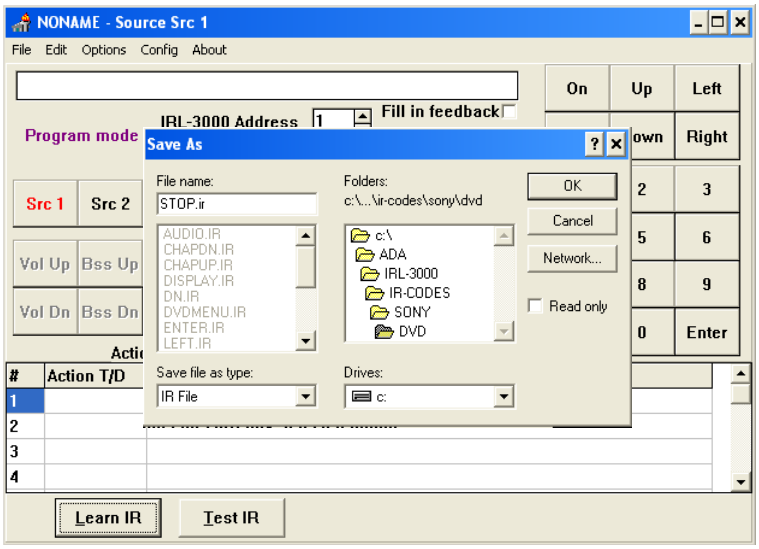
Turn on the HTR-2400 and connect your PC to either its front panel RS-232 port or the rear panel RS-232 port and then flip the small red switch on the back of the HTR-2400 to the right (IR Learn Mode). You can also communicate to the HTR-2400's rear panel ADA Bus port via an ISO-E or ISO-USB. Here you do not need to flip the switch to the IR Learn Mode position.

The IRL-3000 program will appear under the applications window or in the IRL-3000 folder (PROGADA.exe for "Program ADA"). After you have connected the PC to the HTR, start the application. If you get an error message, check your RS-232 cable, the IR Learner Switch position and/or your Com port under Config.







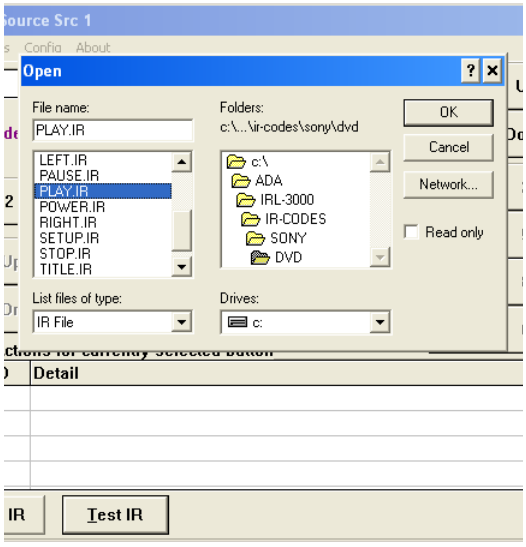


Hint: Once you have selected the "Learn IR" button, its boarder will be outlined in bold. Simply pressing the Enter key on your keyboard will engage the Learn (capture) function, saving time navigating the mouse. The same works for after you have renamed the ".ir" file as simply hitting the Enter key on your keyboard is the same as pressing OK.

Step 3 - Capturing IR Codes

Before you begin to build your IR library, it is suggested that you make certain that the batteries in the remote controls are good and that all other possible IR interference (lighting fixtures, emitters, sun light etc.) is turned off or blocked.

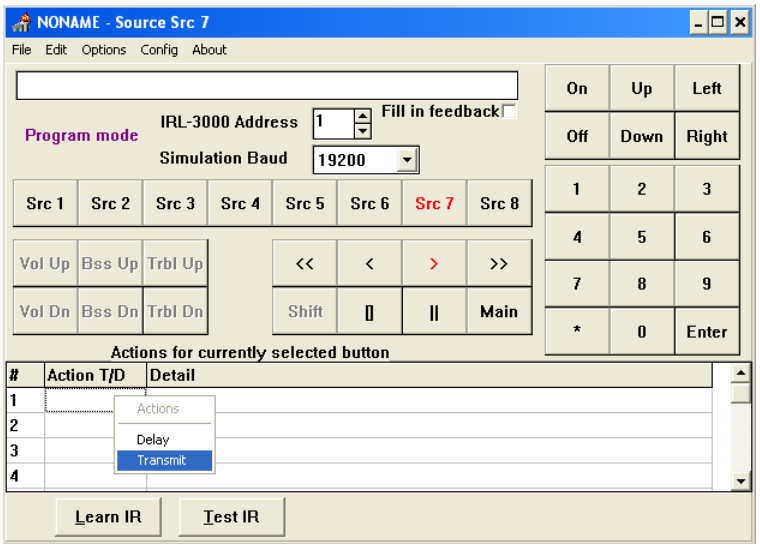
1. With the program up an running, press the **Learn button** located in the lower left portion of the window.
2. Aim your remote control at the HTR-2400's rear panel IR receiver.
3. Hold the button on the remote control down for a second or two.
4. Release the remote button and wait for the IRL program to respond.
5. A "Save As" window will appear. Navigate to the folder that will contain this code (i.e. Sony...DVD) in the right window.
6. Under "File name:", name the function (i.e. STOP) followed by the text ".ir". All infrared code files must end in ".ir" with no more than eight characters describing the function.
7. Press the OK button and repeat these steps for all functions and sources.

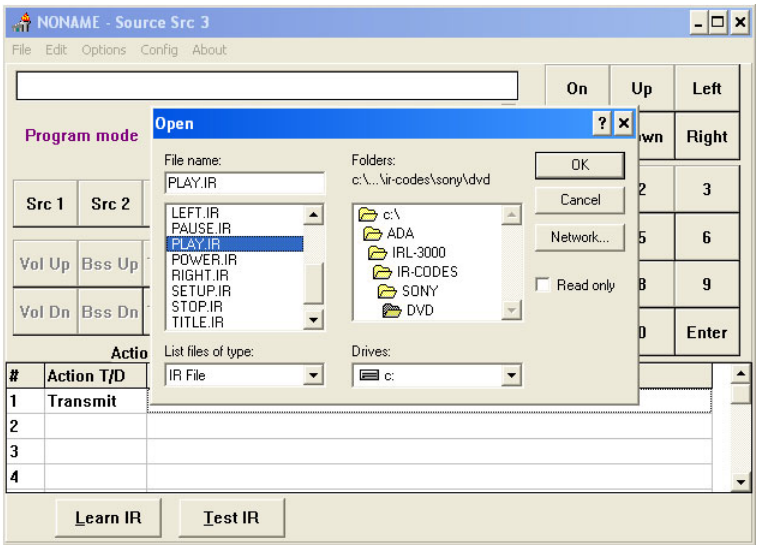


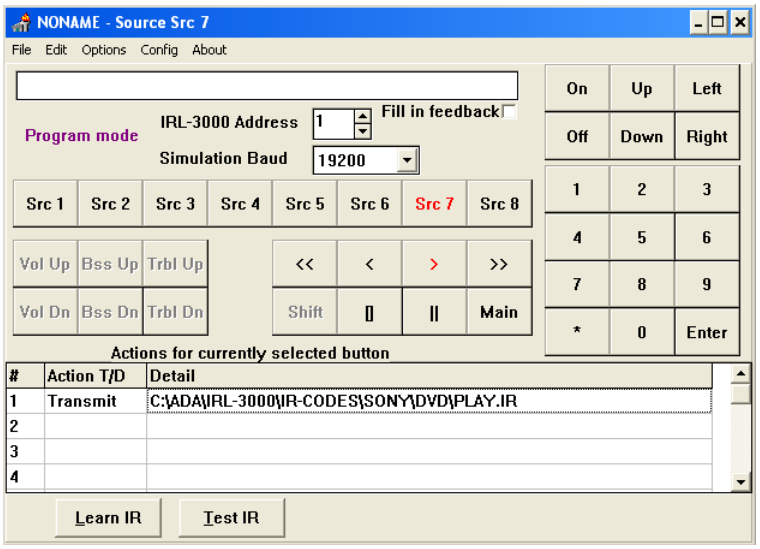
Step 4 - Testing IR Codes

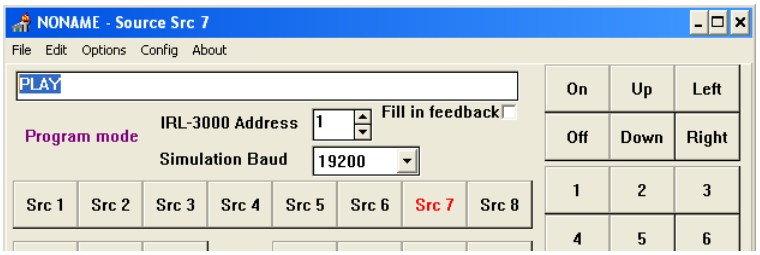
All IR testing is done using Port 1 on the HTR-2400 regardless if the source is going to be on another port. Remember that the IR flasher is a relatively cheap component and may not work even if appearing new. It is advised to have several IR emitters available in case one is bad. To test an IR command:

1. Connect a flasher to the component being tested and plug it into Port 1.
2. Press the **Test button** in the software.
3. An Open File window will appear. Navigate to the folder containing this components IR codes and select the function you wish to test and press OK.
4. Repeat these steps for all sources and functions.









Step 5 - Mapping IR Codes

Once captured IR codes have been tested and verified, you can begin mapping the commands on their appropriate buttons.

1 Select the source (Src) number that the component is going to be connected to. Typically, the input on the multi-room system corresponds to the IRL port (i.e. source 7 is input 7 on the HTR-2400 and controlled by port 7).

2 Select the first transport function you wish to map (i.e. > or play).

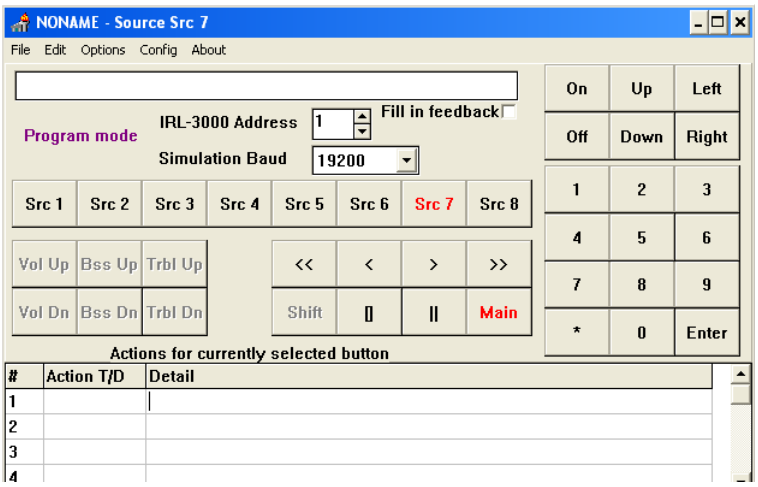
3 On line #1 under Action T/D, select Transmit.

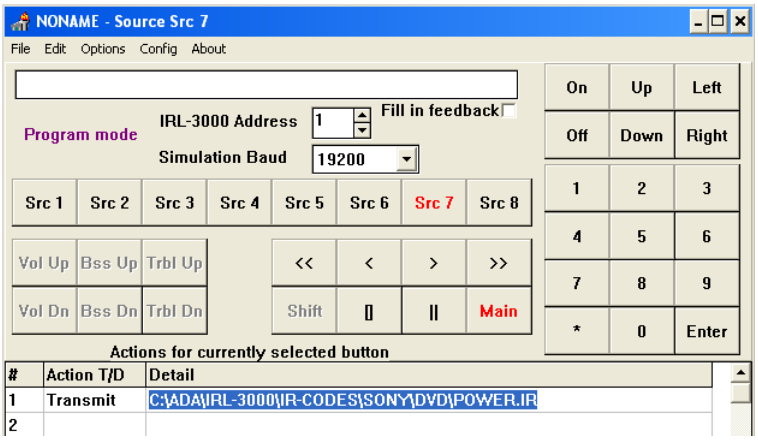
4 On the same line, Double-click the mouse while under Detail. A Open window will appear. Navigate to the device who's IR code you wish to select and choose the appropriate code from the left window. ***Hint, you can skip step 3 by just going right to step 4. Double-clicking under Detail automatically inserts the Transmit option in Action.***

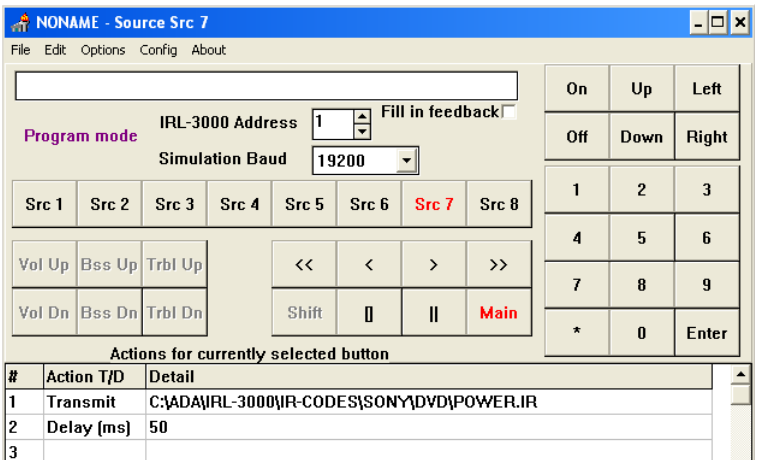
5 When the desired IR code is selected, press OK or hit the Enter key. A path will appear under detail. This is the map used to find the respective IR code when downloading to the IRL. If you were to go and move files around or rename files/folders after the buttons are mapped, the program will not find them during download. This is why creating the proper folder structure is so important prior to mapping IR commands.

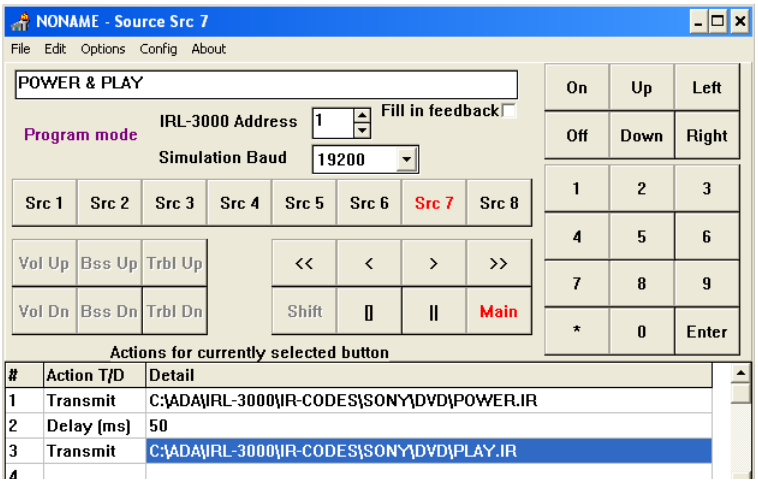
6 Several ADA keypads feature a display that can confirm an IR based transport function by name (i.e. PLAY). In the top of the window, type in a word that describes the IR code/function.

7 Repeat these steps for all IR codes and components.




NONAME - Source Src 7
File Edit Options Config About
Program mode
IRL-3000 Address 1
Fill in feedback
Simulation Baud 19200
Src 1 Src 2 Src 3 Src 4 Src 5 Src 6 Src 7 Src 8
Vol Up Bss Up Trbl Up
Vol Dn Bss Dn Trbl Dn
<< < > >>
Shift [] || Main
On Up Left
Off Down Right
1 2 3
4 5 6
7 8 9
* 0 Enter
Actions for currently selected button
Action T/D Detail
1 Transmit C:\ADA\IRL-3000\IR-CODES\SONY\DVD\POWER.IR
2


NONAME - Source Src 7
File Edit Options Config About
Program mode
IRL-3000 Address 1
Fill in feedback
Simulation Baud 19200
Src 1 Src 2 Src 3 Src 4 Src 5 Src 6 Src 7 Src 8
Vol Up Bss Up Trbl Up
Vol Dn Bss Dn Trbl Dn
<< < > >>
Shift [] || Main
On Up Left
Off Down Right
1 2 3
4 5 6
7 8 9
* 0 Enter
Actions for currently selected button
Action T/D Detail
1 Transmit C:\ADA\IRL-3000\IR-CODES\SONY\DVD\POWER.IR
2 Delay (ms) 50
3


NONAME - Source Src 7
File Edit Options Config About
POWER & PLAY
Program mode
IRL-3000 Address 1
Fill in feedback
Simulation Baud 19200
Src 1 Src 2 Src 3 Src 4 Src 5 Src 6 Src 7 Src 8
Vol Up Bss Up Trbl Up
Vol Dn Bss Dn Trbl Dn
<< < > >>
Shift [] || Main
On Up Left
Off Down Right
1 2 3
4 5 6
7 8 9
* 0 Enter
Actions for currently selected button
Action T/D Detail
1 Transmit C:\ADA\IRL-3000\IR-CODES\SONY\DVD\POWER.IR
2 Delay (ms) 50
3 Transmit C:\ADA\IRL-3000\IR-CODES\SONY\DVD\PLAY.IR
4

Step 6 - Main Command

The HTR-2400 does not feature an automatic On and Off function that tracks source usage. This feature is only available on the Suite 16 and Suite 8x8 systems. As such the IRL On and Off buttons only work from the HTR-2400's front panel.

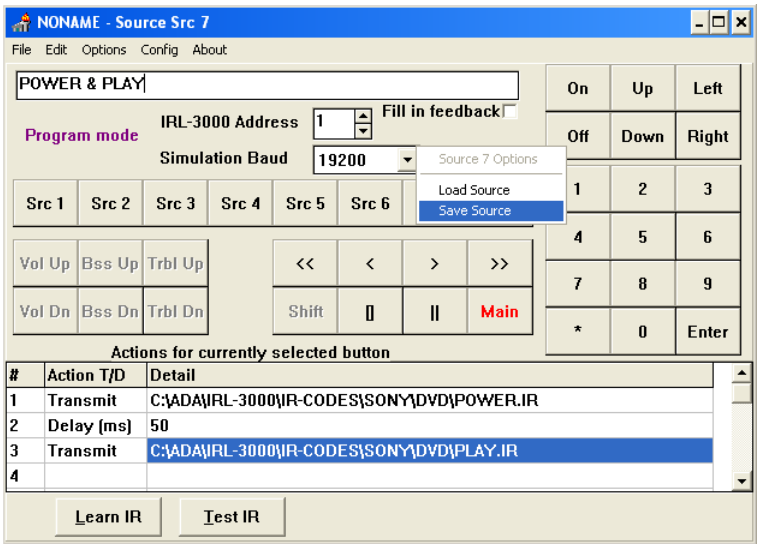
The "Main" function refers to a command released by repeatedly pressing the source button on the keypad after the source has already been selected (on the MC-6011, this is the function released by pressing the SEL button). For a CD player this could be disc skip and for a SAT, DVD or VCR it could be power on and off.

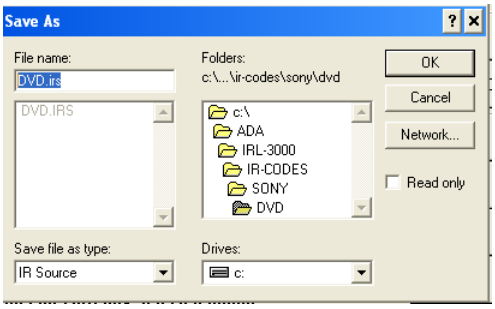
You load the IR code for this function just as you would all other commands as noted on the previous page.

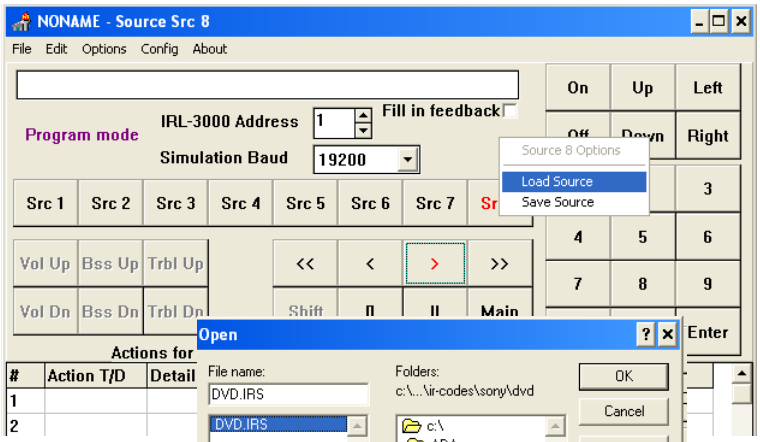
Step 7 - Macro Commands

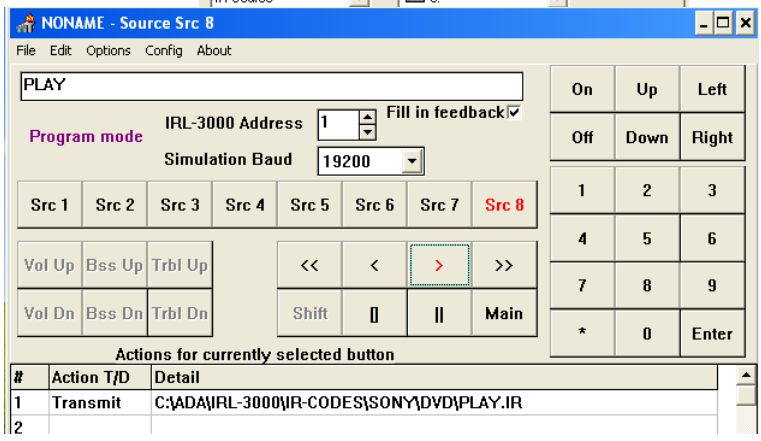
The IRL permits you to map out a macro command that could be as long as sixteen steps. This is useful for SAT receivers where instead of using the numeric pad to enter in a channel number, a single button press might be used to recall a specific SAT music channel. Here you can even program in a display name (i.e. DSS JAZZ) which will appear momentarily when say the number 1 is pressed. Alternately, you can also use the macro command to issue a Power On and Play sequence as in our example. To do so:

1 After entering the line 1 command as discussed, on line 2 under Action T/D, select Delay.
2 Double click slowly under detail and enter your delay in ms.
3 On line 3, select the next IR command as previously discussed.
4 Add a label in the top window.









Step 8 - Saving IRS Files

Once a source has been completely populated with IR codes and appropriately labeled, you can save the entire source configuration as an IRS file (IR Source file). This is critical in that once you have a library of IR files complete with IRS files, you can load an IRL in minutes. To save a source file as a reusable IRS file:

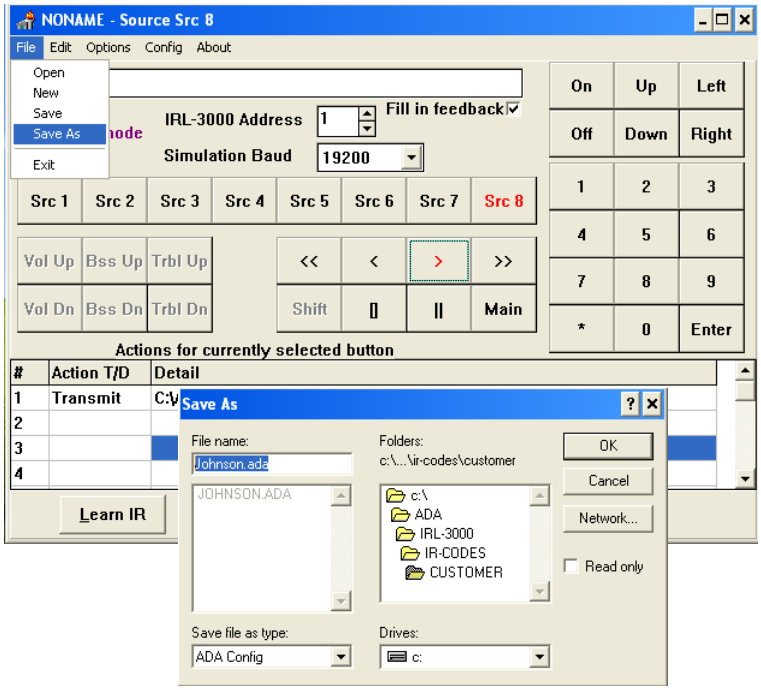
1 Place the mouse cursor over the source (Src #) button and right click.
2 Select Save Source.
3 A "Save As" window will appear. Using the window on the right, navigate to the source folder for this device. IRS files should reside with the sources IR codes.
4 Name this file with no more than eight characters followed by the ending ".irs". All IR source files end in ".irs". In this example, we are calling this file "DVD.irs".

Step 9 - Loading IRS Files

Because IRS files contain all button maps and feedback names, they are the ideal way to load an IRL from a proven and tested IR library. To load a source file:

1 Place the mouse cursor over the source (Src #) button and right click.
2 Select Load Source.
3 A "Open" window will appear. Using the window on the right, navigate to the source folder for this device and then select the IRS file.

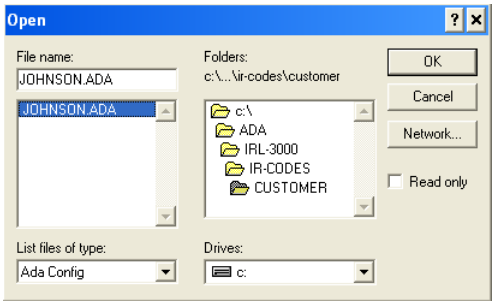
The entire source file will now load onto this IRL port. If you already have developed an IRL library, you can repeat these steps for other sources on your IRL.



Step 10 - Saving ADA Files

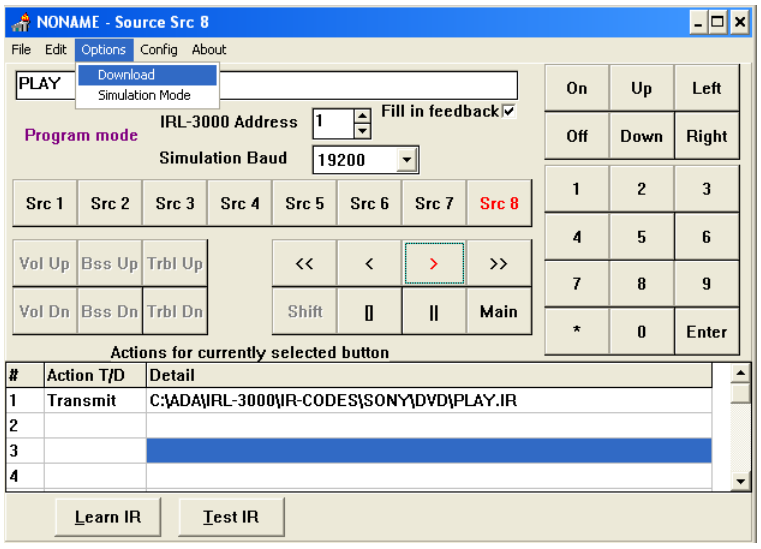
Once you have built an entire IRL for a customer, you can save the layout as an ADA customer file. All ADA customer files can be no more than eight characters in length and must end in ".ada". To save a file:

1 From the File pull down window select "Save As."
2 A Save As window will open. Navigate to the Customer folder in the right window and then type in a project name under File name. The project name could be the customer's name followed by the ".ada" ending.
3 Then press OK.



Step 11 - Loading ADA Files

To load an ADA file, select Open from the pull down menu under File. An Open window will appear. Navigate to the Customer folder in the right window and then select the project you wish to open.

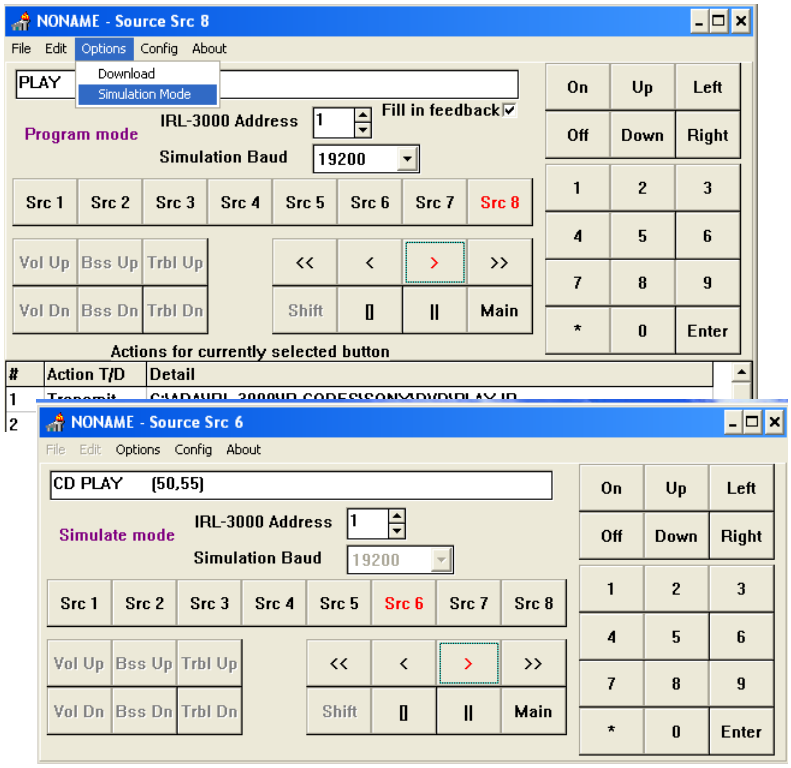


Step 12 - Downloading to IRL

Once you have built an entire IRL for a customer you are ready to load (download) to the IRL. **Please note, that if the IRL has already been previously loaded, this step will erase all codes currently in the IRL. As such, if you are adding a component, you will need to download all source files and not just the new components.**

1 Check the "Fill in feedback" box.
2 From the Options pull down window select "Download."

The IRL will automatically begin the process of downloading to the IRL. The screen will flash buttons as they are being loaded. When the flashing ends, the IRL is loaded.

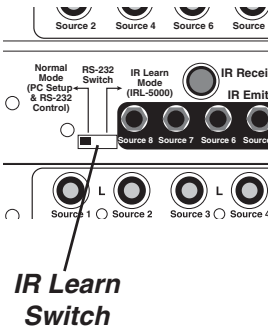


Step 13 - Simulation Mode

Once the IRL has been loaded, you can now test the individual IR ports by using your PC as a keypad.

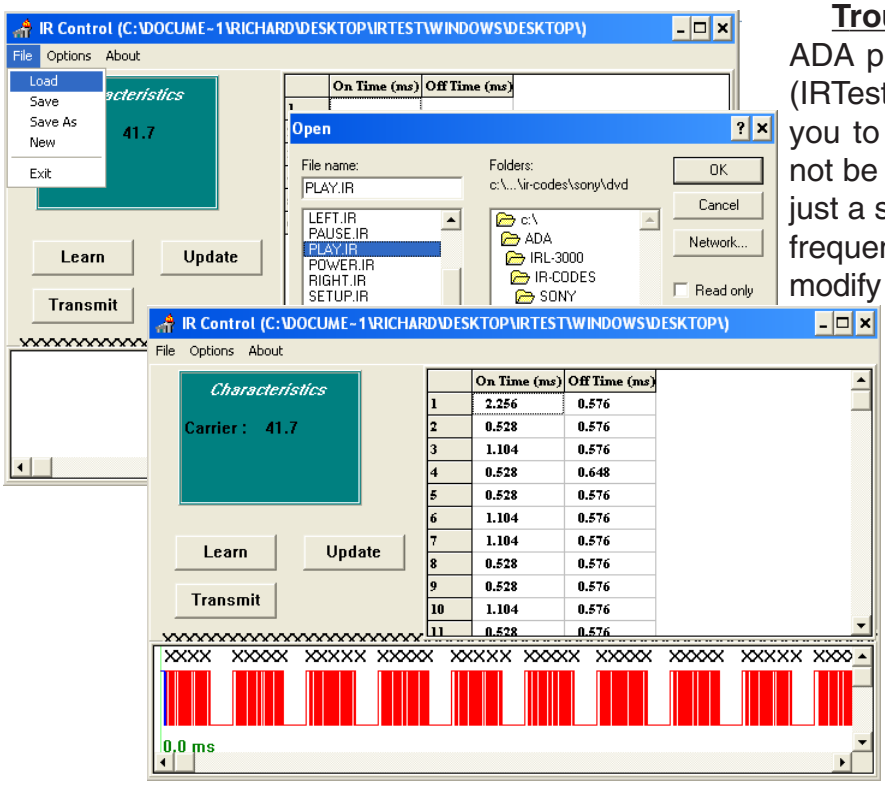
1. Connect the sources' IR flashers to their permanent IR ports on the back of the HTR-2400.
2. Under the "Options" pull down window, select "Simulation Mode."
3. Select source number (Src #) and then various functions. Verify that the command functions are working.
4. Verify that the feedback is displaying at the top of the screen. Please note, that the additional numbers in the brackets will not appear on the keypad's display.

Step 14 - Disconnection

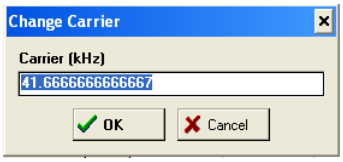


Once all sources are functioning, you can close the application. If you are connected to either the HTR-2400's front or rear panel RS-232 ports, remember to flip the red IRL Learn Switch on the back of the HTR-2400 back to "Normal Mode." At this time, ADA recommends powering down the HTR-2400 for a few moments and then powering it back up again. Assuming that you have already programmed the HTR-2400 source configuration (multi-room and home theater setup), you are ready to test the HTR-2400 front panel transport buttons.

Trouble-Shooting IR Codes



ADA provides an IR Test program (IRTest) on its web site that permits you to analyze an IR file that may not be working. Often this requires just a slight change to the IR codes frequency. The IR Test program can modify captured ".ir" files or can work with the IRL to capture and test new IR files. Here you can open a ".ir" file under File/Load. The file will appear in wave form and the carrier will display. Under Options you elect to change the carrier.



RS-232 CODES - MULTI-ROOM

		HTR 2400 MULTIROOM AUDIO SERIAL PROTOCOL V3.1				
STRING	**START**	**ACTION PREFIX**		**PART 2**	**GLOBAL**	**PART 3**
FUNCTION	**CHARACTER**	**DO (SET)**	**GET**	**FUNCTION**		**R01 TO R08**
INPUT UP	`	S	G	INUP		R01
INPUT DOWN	`	S	G	INDN		R01
INPUT 1	`	S	G	AD01		R01
INPUT 2	`	S	G	AD02		R01
INPUT 3	`	S	G	AD03		R01
INPUT 4	`	S	G	AD04		R01
INPUT 5	`	S	G	AD05		R01
INPUT 6	`	S	G	AD06		R01
INPUT 7	`	S	G	AD07		R01
INPUT 8	`	S	G	AD08		R01
MUTE TOGGLE	`	S	G	MTOG		R01
MUTE ON	`	S	G	MTON		R01
MUTE OFF	`	S	G	MTOF		R01
ROOM OFF	`	S	G	RMOF		R01
VOLUME UP	`	S	G	VLUP		R01
VOLUME DN	`	S	G	VLDN		R01
BASS UP	`	S	G	BSUP		R01
BASS DN	`	S	G	BSDN		R01
MIDRANGE UP	`	S	G	MDUP		R01
MIDRANGE DN	`	S	G	MDDN		R01
TREBLE UP	`	S	G	TRUP		R01
TREBLE DN	`	S	G	TRDN		R01
ALL TONES FLAT	`	S	G	FLAT		R01
TONE RECALL UP + FLAT	`	S	G	TNUP		R01
TONE RECALL 1	`	S	G	TNR1		R01
TONE RECALL 2	`	S	G	TNR2		R01
TONE RECALL 3	`	S	G	TNR3		R01
TONE RECALL 4	`	S	G	TNR4		R01
TONE STORE 1	`	S	G	TNS1		R01
TONE STORE 2	`	S	G	TNS2		R01
TONE STORE 3	`	S	G	TNS3		R01
TONE STORE 4	`	S	G	TNS4		R01
VOLUME RECALL 1	`	S	G	VLR1		R01
VOLUME RECALL 2	`	S	G	VLR2		R01
VOLUME RECALL 3	`	S	G	VLR3		R01
VOLUME RECALL 4	`	S	G	VLR4		R01
VOLUME STORE 1	`	S	G	VLS1		R01
VOLUME STORE 2	`	S	G	VLS2		R01
VOLUME STORE 3	`	S	G	VLS3		R01
VOLUME STORE 4	`	S	G	VLS4		R01
LOUDNESS ON	`	S	G	LDON		R01
LOUDNESS OFF	`	S	G	LDOF		R01
LIMITER ON	`	S	G	LMON		R01
LIMITER OFF	`	S	G	LMOF		R01
VOLUME DIRECT	`	S	G	V0##		R01
BASS DIRECT	`	S	G	B###		R01
MIDRANGE DIRECT	`	S	G	M###		R01
TREBLE DIRECT	`	S	G	T###		R01
BALANCE LEFT	`	S	G	BALL		R01
BALANCE RIGHT	`	S	G	BALR		R01
BALANCE EQUAL	`	S	G	BLEQ		R01
BALANCE RECALL 1	`	S	G	BLR1		R01
BALANCE RECALL 2	`	S	G	BLR2		R01
BALANCE STORE 1	`	S	G	BLS1		R01
BALANCE STORE 2	`	S	G	BLS2		R01
INPUT LEVEL TRIM 1	`	S	G	IT01	G##	
INPUT LEVEL TRIM 2	`	S	G	IT02	G##	
INPUT LEVEL TRIM 3	`	S	G	IT03	G##	
INPUT LEVEL TRIM 4	`	S	G	IT04	G##	
INPUT LEVEL TRIM 5	`	S	G	IT05	G##	
INPUT LEVEL TRIM 6	`	S	G	IT06	G##	
INPUT LEVEL TRIM 7	`	S	G	IT07	G##	
INPUT LEVEL TRIM 8	`	S	G	IT08	G##	
ALL OFF	`	S	G	ALOF	G00	
PARTY SET 1	`	S	G	PTS1		R01
PARTY SET 2	`	S	G	PTS2		R01
PARTY SET 3	`	S	G	PTS3		R01
PARTY SET 4	`	S	G	PTS4		R01
PARTY CLEAR 1	`	S	G	PTC1		R01
PARTY CLEAR 2	`	S	G	PTC2		R01
PARTY CLEAR 3	`	S	G	PTC3		R01
PARTY CLEAR 4	`	S	G	PTC4		R01
PARTY 1	`	S		PTY1	G##	
PARTY 2	`	S		PTY2	G##	
PARTY 3	`	S		PTY3	G##	
PARTY 4	`	S		PTY4	G##	
	`	S	G	PS##	G##	
		S	G	PC##	G##	
MAXIMUM VOLUME LEVEL	`	S	G	MV##		R01
RESTORE FACTORY DEFAULTS	`	S		FDEF	G00	
ALL UPDATE	`		G	ALRM	G00	
ROOM UPDATE	`		G	ROOM		R01
ALL ROOM CONTROL UPDATE	`		G	ALRC	G00	
ROOM CONTROL UPDATE	`		G	RCON		R01
VERSION REQUEST	`		G	VERS	G00	
ECHO	`	E	# of bytes to	follow 1-255	bytes to be sent	

RS-232 CODES - HOME THEATER

COMMAND STRING BREAKDOWN							
CMDA010B0MSCINP1<cr>							
Where:							
CMD <- preamble	NOTE: IT IS POSSIBLE TO HAVE LENGTH AS A CONSTANT,						
A <-data type	BY USING A PLACEHOLDER SUCH AS A SPACE OR						
010 <- length till <cr> (in decimal)	EXCLAMATION POINT IN THE COMMAND STRING.						
B <- system type	FOR EXAMPLE: CMDA015B0MSCINP1!!!!!<cr>						
0 <- system address							
MSCINP1 <- string	LONGEST LENGTH CAN ONLY BE UP TO 015.						
<cr> <- carriage return (0x0D)							
FEEDBACK STRING BREAKDOWN							
FBKC018B0VOL -40.5 DB023<cr>							
Where:							
FBK <- preamble							
C <-data type							
018 <- length till <cr> (in decimal)	NOTE: LENGTH WILL ALWAYS BE 018 FOR ALL ASCII						
B <- system type	FEEDBACK STRINGS.						
0 <- system address							
VOL -40.5 DB <- 12 character string							
023 <- index from string							
<cr> <- carriage return (0x0D)							
ASCII COMMANDS							
MISC, UPDATE REQUEST	MSC	UPD	ALL	UPDATE - SEND ALL POSSIBLE INFORMAT			
MISC, UPDATE REQUEST	MSC	UPD	VER1	UPDATE - MICRO VERSION			
MISC, UPDATE REQUEST	MSC	UPD	VER2	UPDATE - PROM VERSION			
MISC, UPDATE REQUEST	MSC	UPD	VER3	UPDATE - DSP VERSION			
MISC, UPDATE REQUEST (APPLICABLE IN THX HW)	MSC	UPD	ASA	UPDATE - THX'S ASA			
MISC, UPDATE REQUEST (APPLICABLE IN THX HW)	MSC	UPD	FLT	UPDATE - THX'S RE-EQ - TIMBRE - DEC			
MISC, UPDATE REQUEST	MSC	UPD	MST	UPDATE - MASTER VOLUME			
MISC, UPDATE REQUEST	MSC	UPD	VAR1	UPDATE - INPUT - MASTER VOLUME - FO			
MISC, UPDATE REQUEST	MSC	UPD	VAR2	UPDATE - MASTER VOLUME - FORMAT - M			
MISC, UPDATE REQUEST	MSC	UPD	VAR3	UPDATE - MASTER VOLUME - MAXIMUM VO			
MISC, UPDATE REQUEST	MSC	UPD	VAR4	UPDATE - INPUT - MASTER VOLUME - FO			
MISC, UPDATE REQUEST	MSC	UPD	VOL	UPDATE - (BALANCE) C - SUB - L - R			
MISC, UPDATE REQUEST	MSC	UPD	DLY	UPDATE - (DELAY) C - SUB - L - R -			
MISC, UPDATE REQUEST	MSC	UPD	SPK	UPDATE - (SPEAKER SETUP) LR - C - S			
MISC, UPDATE REQUEST	MSC	UPD	SOL	UPDATE - SOLO TEST			
MISC, UPDATE REQUEST	MSC	UPD	TNA	UPDATE - INCLUDE/EXCLUDE & FREQS &			
MISC, UPDATE REQUEST	MSC	UPD	TNB	UPDATE - INCLUDE/EXCLUDE & FREQS &			
MISC, UPDATE REQUEST	MSC	UPD	FNL	UPDATE - FINAL INPUT			
MISC, UPDATE REQUEST	MSC	UPD	PL2	UPDATE - PLII/PLIIx MUSIC AND CUSTO			
MISC, UPDATE REQUEST	MSC	UPD	INP	UPDATE - INPUT SELECTED			
MISC, UPDATE REQUEST	MSC	UPD	TRN	UPDATE - TURN-ON INPUT			
MISC, UPDATE REQUEST	MSC	UPD	XVR	UPDATE - CROSSOVER			
MODE, UP/DN FOR ANY INPUT FORMAT	MDE	MSC	UP	DN			
MODE, MULTI-PIN INPUT	MDE	MIN	DIR51	MODE - DISCRETE + DIRECT 5.1			
MODE, MULTI-PIN INPUT	MDE	MIN	DIR71	MODE - DISCRETE + DIRECT 7.1			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	DIR51	MODE - DISCRETE + DIRECT 5.1			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	DIR71	MODE - DISCRETE + DIRECT 7.1 + ES/E			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	ST	MODE - STEREO DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	MN	MODE - MONO DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	3CH	MODE - 3 CHANNEL DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	PHAN	MODE - PHANTOM DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	CIN	MODE - DISCRETE			
MODE, MULTI-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	5.1	CIN+	MODE - DISCRETE + THX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	EXES	MODE - DISCRETE + EX/ES			
MODE, MULTI-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	5.1	EXES+	MODE - THX + EX/ES			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	NEO	MODE - DISCRETE + NEO:6 CINEMA			
MODE, MULTI-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	5.1	NEO+	MODE - THX + NEO:6 CINEMA			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	NEOMSC	MODE - DISCRETE + NEO:6 MUSIC			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	MVEEX	MODE - DISCRETE + PLIIx MOVIE			
MODE, MULTI-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	5.1	MVEEX+	MODE - THX + PLIIx MOVIE			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	MSCEX	MODE - DISCRETE + PLIIx MUSIC			
MODE, MULTI-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	5.1	THX2	MODE - THX ULTRA2 CINEMA			
MODE, MULTI-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	5.1	THX2G	MODE - THX ULTRA2 GAME			
MODE, MULTI-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	5.1	THX2A	MODE - THX ULTRA2 ADVANCED			
MODE, MULTI-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	5.1	THX2M	MODE - THX ULTRA2 MUSICMODE			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	HALL1	MODE - HALL1 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	HALL2	MODE - HALL2 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	HALL3	MODE - HALL3 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	CRCH1	MODE - CHURCH1 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	CRCH2	MODE - CHURCH2 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	CLUB1	MODE - CLUB1 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	CLUB2	MODE - CLUB2 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	CLUB3	MODE - CLUB3 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	STDM1	MODE - STADIUM1 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	STDM2	MODE - STADIUM2 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	THETR1	MODE - THEATER1 DOWNMIX			
MODE, MULTI-CHANNEL INPUT	MDE	5.1	THETR2	MODE - THEATER2 DOWNMIX			
MODE, TWO-CHANNEL INPUT	MDE	2.0	DIR20	MODE - DIRECT 2.0			
MODE, TWO-CHANNEL INPUT	MDE	2.0	ST	MODE - STEREO			
MODE, TWO-CHANNEL INPUT	MDE	2.0	MN	MODE - MONO			
MODE, TWO-CHANNEL INPUT	MDE	2.0	VTL	MODE - ADA VIRTUAL (aka AGL Enhance			
MODE, TWO-CHANNEL INPUT	MDE	2.0	QUAD	MODE - ADA QUADBYPASS			
MODE, TWO-CHANNEL INPUT	MDE	2.0	STE	MODE - ADA STEREO ENHANCE			
MODE, TWO-CHANNEL INPUT	MDE	2.0	MNE	MODE - ADA MONO ENHANCE			
MODE, TWO-CHANNEL INPUT	MDE	2.0	ST5	MODE - ADA STEREO 5			
MODE, TWO-CHANNEL INPUT	MDE	2.0	MN5	MODE - ADA MONO 5			

MODE, TWO-CHANNEL INPUT	MDE	2.0	NEO3CH	MODE - DTS NEO 3CH							
MODE, TWO-CHANNEL INPUT	MDE	2.0	NEOPHA	MODE - DTS NEO PHANTOM							
MODE, TWO-CHANNEL INPUT	MDE	2.0	NEO5	MODE - DTS NEO 5CH							
MODE, TWO-CHANNEL INPUT	MDE	2.0	NEO	MODE - DTS NEO:6 CINEMA							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	NEO+	MODE - DTS NEO:6 CINEMA + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	NEOMSC	MODE - DTS NEO:6 MUSIC							
MODE, TWO-CHANNEL INPUT	MDE	2.0	3CH	MODE - DOLBY 3 CHANNEL							
MODE, TWO-CHANNEL INPUT	MDE	2.0	PHAN	MODE - DOLBY PHANTOM							
MODE, TWO-CHANNEL INPUT	MDE	2.0	PL	MODE - DOLBY PLII PROLOGIC							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	PL+	MODE - DOLBY PLII PROLOGIC + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	MTX	MODE - DOLBY PLII MATRIX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	MTXEX	MODE - DOLBY PLIIx MATRIX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	GME	MODE - DOLBY PLII GAME							
MODE, TWO-CHANNEL INPUT	MDE	2.0	GMEEX	MODE - DOLBY PLIIx GAME							
MODE, TWO-CHANNEL INPUT	MDE	2.0	MSC	MODE - DOLBY PLII MUSIC							
MODE, TWO-CHANNEL INPUT	MDE	2.0	MSCEX	MODE - DOLBY PLIIx MUSIC							
MODE, TWO-CHANNEL INPUT	MDE	2.0	MVE	MODE - DOLBY PLII MOVIE							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	MVE+	MODE - DOLBY PLII MOVIE + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	MVEEX	MODE - DOLBY PLIIx MOVIE							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	MVEEX+	MODE - DOLBY PLIIx MOVIE + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CS1	MODE - DOLBY PLII CUSTOM1							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	CS1+	MODE - DOLBY PLII CUSTOM1 + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CS1EX	MODE - DOLBY PLIIx CUSTOM1							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	CS1EX+	MODE - DOLBY PLIIx CUSTOM1 + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CS2	MODE - DOLBY PLII CUSTOM2							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	CS2+	MODE - DOLBY PLII CUSTOM2 + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CS2EX	MODE - DOLBY PLIIx CUSTOM2							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	CS2EX+	MODE - DOLBY PLIIx CUSTOM2 + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CS3	MODE - DOLBY PLII CUSTOM3							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	CS3+	MODE - DOLBY PLII CUSTOM3 + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CS3EX	MODE - DOLBY PLIIx CUSTOM3							
MODE, TWO-CHANNEL INPUT (APPLICABLE IN THX HW)	MDE	2.0	CS3EX+	MODE - DOLBY PLIIx CUSTOM3 + THX							
MODE, TWO-CHANNEL INPUT	MDE	2.0	HALL1	MODE - HALL1							
MODE, TWO-CHANNEL INPUT	MDE	2.0	HALL2	MODE - HALL2							
MODE, TWO-CHANNEL INPUT	MDE	2.0	HALL3	MODE - HALL3							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CRCH1	MODE - CHURCH1							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CRCH2	MODE - CHURCH2							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CLUB1	MODE - CLUB1							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CLUB2	MODE - CLUB2							
MODE, TWO-CHANNEL INPUT	MDE	2.0	CLUB3	MODE - CLUB3							
MODE, TWO-CHANNEL INPUT	MDE	2.0	STDM1	MODE - STADIUM1							
MODE, TWO-CHANNEL INPUT	MDE	2.0	STDM2	MODE - STADIUM2							
MODE, TWO-CHANNEL INPUT	MDE	2.0	THETR1	MODE - THEATER1							
MODE, TWO-CHANNEL INPUT	MDE	2.0	THETR2	MODE - THEATER2							
VOLUME, MASTER	VOL	MST	UP	DN	MUTE	UNMUTE	NSEOFF	SOLOFF	LMROFF		
VOLUME, MASTER W/MULTI INC/DEC	VOL	MST	2UP	2DN	3UP	3DN	4UP	4DN	5UP	5DN	
VOLUME, MASTER RECALL/STORE	VOL	MST	1STR	1RCL	2STR	2RCL	3STR	3RCL	4STR	4RCL	
VOLUME, CENTER	VOL	CEN	UP	DN							
VOLUME, SUBWOOFER	VOL	SUB	UP	DN							
VOLUME, LEFT	VOL	LFT	UP	DN							
VOLUME, RIGHT	VOL	RGT	UP	DN							
VOLUME, LEFT SURROUND	VOL	LSR	UP	DN							
VOLUME, RIGHT SURROUND	VOL	RSR	UP	DN							
VOLUME, SURROUND BACK LEFT	VOL	SBL	UP	DN							
VOLUME, SURROUND BACK RIGHT	VOL	SBR	UP	DN							
VOLUME, FRONTS	VOL	FRT	UP	DN							
VOLUME, SURROUNDS	VOL	SUR	UP	DN							
VOLUME, BACKS	VOL	BCK	UP	DN							
NOISE, TEST	VOL	NSE	CEN	SUB	LFT	RGT	LSR	RSR	SBL	SBR	SEQ
SOLO, TEST	VOL	SOL	CEN	SUB	LFT	RGT	LSR	RSR	SBL	SBR	
TURN-ON, VOLUME PRESET or LAST USED	VOL	TUR	UP	DN							
VOLUME, MAX LIMITER	VOL	MAX	UP	DN							
TONE, PRESET RECALL/STORE	VOL	TNE	1STR	1RCL	2STR	2RCL	3STR	3RCL	4STR	4RCL	
BALANCE+DELAY, RECALL/STORE	VOL	BAL	1STR	1RCL	2STR	2RCL	3STR	3RCL	4STR	4RCL	
MISC, INPUT SELECTOR AND POWER TURN-ON	MSC	INP	1..20	01..20							
MISC, FINAL INPUT	MSC	FNL	UP	DN							
MISC, POWER	MSC	PWR	OFF	UNMUTE	NSEOFF	SOLOFF	LMROFF				
MISC, COPY OF INSTALLERS SETTINGS	MSC	FCT	1STR	1RCL							
SPEAKER, FRONTS SIZE	SPK	FRT	SML	LRG							
SPEAKER, SURROUNDS SIZE	SPK	SUR	OFF	SML	LRG						
SPEAKER, CENTER SIZE	SPK	CEN	OFF	SML	LRG						
SPEAKER, BACKS SIZE	SPK	BCK	OFF	SML	LRG	2SML	2LRG				
SPEAKER, SUBWOOFER SIZE	SPK	SUB	NO	YES							
SPEAKER, SUB CROSSOVER FILTER	SPK	XVR	UP	DN							
THX, SUBWOOFER LIMITER (APPLICABLE IN THX HW)	SPK	LMR	ON	UP	DN						
THX, ADVANCED SPEAKER ARRAY (APPLICABLE IN THX HW)	SPK	ASA	ON	OFF	12IN	12-48	48IN				
SPEAKER, DELAY CENTER	DLY	CEN	UP	DN							
SPEAKER, DELAY SUB	DLY	SUB	UP	DN							
SPEAKER, DELAY LEFT	DLY	LFT	UP	DN							
SPEAKER, DELAY RIGHT	DLY	RGT	UP	DN							
SPEAKER, DELAY LS	DLY	LSR	UP	DN							
SPEAKER, DELAY RS	DLY	RSR	UP	DN							
SPEAKER, DELAY SBL	DLY	SBL	UP	DN							
SPEAKER, DELAY SBR	DLY	SBR	UP	DN							
PL2/PL2x, DIMENSION (MODE DEPENDENT)	PL2	DIM	UP	DN							
PL2/PL2x, PANARAMA (MODE DEPENDENT)	PL2	PAN	ON	OFF							
PL2/PL2x, CENTER WIDTH (MODE DEPENDENT)	PL2	CEN	UP	DN							

RS-232 CODES - HOME THEATER (CONT.)

PL2/PL2x, AUTO BALANCE (MODE DEPENDENT) (NOT FOR MUSIC)	PL2	BAL	ON	OFF		
PL2/PL2x, SURROUND FILTER (MODE DEPENDENT) (NOT FOR MUSIC)	PL2	FTR	FULL	LPF	SHELF	
PL2/PL2x, RS INVERT (MODE DEPENDENT) (NOT FOR MUSIC)	PL2	INV	ON	OFF		
PL2/PL2x, MATRIX COEF (MODE DEPENDENT) (NOT FOR MUSIC)	PL2	MTX	0COEF	1COEF	2COEF	
PL2/PL2x, SURR DELAY (MODE DEPENDENT) (NOT FOR MUSIC)	PL2	DLY	ON	OFF		
PL2/PL2x, MUSIC DIMENSION	CSM	DIM	UP	DN		
PL2/PL2x, MUSIC PANARAMA	CSM	PAN	ON	OFF		
PL2/PL2x, MUSIC CENTER WIDTH	CSM	CEN	UP	DN		
PL2/PL2x, CUSTOM1 DIMENSION	CS1	DIM	UP	DN		
PL2/PL2x, CUSTOM1 PANARAMA	CS1	PAN	ON	OFF		
PL2/PL2x, CUSTOM1 CENTER WIDTH	CS1	CEN	UP	DN		
PL2/PL2x, CUSTOM1 AUTO BALANCE	CS1	BAL	ON	OFF		
PL2/PL2x, CUSTOM1 SURROUND FILTER	CS1	FTR	FULL	LPF	SHELF	
PL2/PL2x, CUSTOM1 RS INVERT	CS1	INV	ON	OFF		
PL2/PL2x, CUSTOM1 MATRIX COEF	CS1	MTX	0COEF	1COEF	2COEF	
PL2/PL2x, CUSTOM1 SURR DELAY	CS1	DLY	ON	OFF		
PL2/PL2x, CUSTOM2 DIMENSION	CS2	DIM	UP	DN		
PL2/PL2x, CUSTOM2 PANARAMA	CS2	PAN	ON	OFF		
PL2/PL2x, CUSTOM2 CENTER WIDTH	CS2	CEN	UP	DN		
PL2/PL2x, CUSTOM2 AUTO BALANCE	CS2	BAL	ON	OFF		
PL2/PL2x, CUSTOM2 SURROUND FILTER	CS2	FTR	FULL	LPF	SHELF	
PL2/PL2x, CUSTOM2 RS INVERT	CS2	INV	ON	OFF		
PL2/PL2x, CUSTOM2 MATRIX COEF	CS2	MTX	0COEF	1COEF	2COEF	
PL2/PL2x, CUSTOM2 SURR DELAY	CS2	DLY	ON	OFF		
PL2/PL2x, CUSTOM3 DIMENSION	CS3	DIM	UP	DN		
PL2/PL2x, CUSTOM3 PANARAMA	CS3	PAN	ON	OFF		
PL2/PL2x, CUSTOM3 CENTER WIDTH	CS3	CEN	UP	DN		
PL2/PL2x, CUSTOM3 AUTO BALANCE	CS3	BAL	ON	OFF		
PL2/PL2x, CUSTOM3 SURROUND FILTER	CS3	FTR	FULL	LPF	SHELF	
PL2/PL2x, CUSTOM3 RS INVERT	CS3	INV	ON	OFF		
PL2/PL2x, CUSTOM3 MATRIX COEF	CS3	MTX	0COEF	1COEF	2COEF	
PL2/PL2x, CUSTOM3 SURR DELAY	CS3	DLY	ON	OFF		
MODE, STEREO ENHANCED LEVEL	MDE	STA	UP	DN		
MODE, STEREO ENHANCED DELAY	MDE	STD	UP	DN		
MODE, MONO ENHANCED LEVEL	MDE	MNA	UP	DN		
MODE, MONO ENHANCED DELAY	MDE	MND	UP	DN		
DOLBY DIGITAL, DYNAMIC RANGE	MDE	DYN	MIN	MID	MAX	
THX, RE-EQ (EFFECTIVE IN NON-THX MODE) (FOR THX HW)	MDE	REQ	ON	OFF		
THX, DECORROLATION (EFFECTIVE IN NON-THX MODE) (FOR THX HW)	MDE	DCR	ON	OFF		
THX, TIMBER MATCH (EFFECTIVE IN NON-THX MODE) (FOR THX HW)	MDE	TIM	ON	OFF		
DTS, ATTENUATE LFE	DTS	LFE	UP	DN	ATTN	FLAT
TONE, GROUP A CENTER INC/EXC	TNA	CEN	INV			
TONE, GROUP A SUB INC/EXC	TNA	SUB	INV			
TONE, GROUP A LEFT INC/EXC	TNA	LFT	INV			
TONE, GROUP A RIGHT INC/EXC	TNA	RGT	INV			
TONE, GROUP A LS INC/EXC	TNA	LSR	INV			
TONE, GROUP A RS INC/EXC	TNA	RSR	INV			
TONE, GROUP A SBL INC/EXC	TNA	SBL	INV			
TONE, GROUP A SBR INC/EXC	TNA	SBR	INV			
TONE, GROUP A TREBLE FREQ	TNA	TRF	UP	DN		
TONE, GROUP A TREBLE LEVEL	TNA	TRL	UP	DN		
TONE, GROUP A BASS FREQ	TNA	BSF	UP	DN		
TONE, GROUP A BASS LEVEL	TNA	BSL	UP	DN		
TONE, GROUP B CENTER INC/EXC	TNB	CEN	INV			
TONE, GROUP B SUB INC/EXC	TNB	SUB	INV			
TONE, GROUP B LEFT INC/EXC	TNB	LFT	INV			
TONE, GROUP B RIGHT INC/EXC	TNB	RGT	INV			
TONE, GROUP B LS INC/EXC	TNB	LSR	INV			
TONE, GROUP B RS INC/EXC	TNB	RSR	INV			
TONE, GROUP B SBL INC/EXC	TNB	SBL	INV			
TONE, GROUP B SBR INC/EXC	TNB	SBR	INV			
TONE, GROUP B TREBLE FREQ	TNB	TRF	UP	DN		
TONE, GROUP B TREBLE LEVEL	TNB	TRL	UP	DN		
TONE, GROUP B BASS FREQ	TNB	BSF	UP	DN		
TONE, GROUP B BASS LEVEL	TNB	BSL	UP	DN		
OTHER COMMANDS						
This command will directly program the volume level in decimal (range is 000-255):						
CMDL007B0D128<cr>						
Feedback will resemble:						
FBKC018B0VOL 0.0 DB023<cr>						
This command will directly program the volume level in ASCII (range is -60.0 to max volume):						
CMDL009B0V-30.0<cr>						
Feedback will resemble:						
FBKC018B0VOL -30.0 DB023<cr>						
This command will directly program the volume level in ASCII (range is -60.0 to max volume):						
CMDL011B0V-30.0DB<cr>						
Feedback will resemble:						
FBKC018B0VOL -30.0 DB023<cr>						

RS-232 CODES - XM TUNER

			XM SATELLITE RADIO Hex Commands			
Format of Command String	**Start**	**Constant**	**Command**	**Bus**	**Module**	**End**
6 Characters total	B8h	4Dh	command	bus	module	B8h
Bus Address 0 = 30h				0 = 30h	1 = 20h	
Bus Address 1 = 31h				1 = 31h	2 = 21h	
Bus Address 2 = 32h				2 = 32h	3 = 22h	
Bus Address 3 = 33h				3 = 33h		
Bus Address 4 = 34h				4 = 34h		
Bus Address 5 = 35h				5 = 35h		
Bus Address 6 = 36h				6 = 36h		
Bus Address 7 = 37h				7 = 37h		
Bus Address 8 = 38h				8 = 38h		
Bus Address 9 = 39h				9 = 39h		
Command	**For**	**Module 1**	**Module 2**	**Module 3**		
Normal Operation						
Update Station/Song		11h	12h	13h		
Channel Up		63h	73h	83h		
Channel Down		64h	74h	84h		
Genre Up		65h	75h	85h		
Genre Down		66h	76h	86h		
Station down		1Eh	1Eh	1Eh		
Station up		4Dh	4Dh	4Dh		
Preset Up		17h	1Dh	4Eh		
Preset Down		18h	18h	18h		
Get XM serial number *		A0h	A0h	A0h		
*or send 0,enter from keypad						
Turn on Signal Display *		B0h	B0h	B0h		
*or send 0,0,0,enter from keypad						
Get Software Version		C0h	C0h	C0h		
Preset Mode *		D0h	D0h	D0h		
*or send 0,0,enter from keypad						
In Preset Mode						
Select Preset Up		65h	75h	85h		
Select Preset Down		66h	76h	86h		
Delete Preset		1Eh	1Eh	1Eh		
Escape From Preset Mode		4Dh	4Dh	4Dh		
Numeric Command Format	**Start**	**Constant**	**Constant**	**Numeric**	**IDcode**	**End**
6 characters total				**Command**		
	B8h	4Dh	97h		**Bus + Mod#**	B8h
					0=00h 1=03h	
					1=10h 2=04h	
					2=20h 3=05h	
					3=30h	
					4=40h	
					5=50h	
					6=60h	
					7=70h	
					8=80h	
					9=90h	
Number 0				30h		
Number 1				31h		
Number 2				32h		
Number 3				33h		
Number 4				34h		
Number 5				35h		
Number 6				36h		
Number 7				37h		
Number 8				38h		
Number 9				39h		
Decimal Point				2Eh		
Enter				2Ah		
Feedback Format	**Start**	**12 display**	**Characters**	**Bus**	**Module ID**	**End**
16 characters total	0Fh	Display	Characters			F0h
				0 = 30h	Mod 1 = 80h	
				1 = 31h	Mod 2 = 40h	
				2 = 32h	Mod 3 = 20h	
				3 = 33h		
				4 = 34h		
				5 = 35h		
				6 = 36h		
				7 = 37h		
				8 = 38h		
				9 = 39h		

RS-232 CODES - FM/AM/WX TUNER

			AM/FM/WX Hex Commands			
Format of Command String	**Start**	**Constant**	**Command**	**Bus**	**Module**	**End**
6 Characters total	B8h	4Dh	command	bus	module	B8h
Bus Address 0 = 30h				0 = 30h	1 = 20h	
Bus Address 1 = 31h				1 = 31h	2 = 21h	
Bus Address 2 = 32h				2 = 32h	3 = 22h	
Bus Address 3 = 33h				3 = 33h		
Bus Address 4 = 34h				4 = 34h		
Bus Address 5 = 35h				5 = 35h		
Bus Address 6 = 36h				6 = 36h		
Bus Address 7 = 37h				7 = 37h		
Bus Address 8 = 38h				8 = 38h		
Bus Address 9 = 39h				9 = 39h		
Command	**For**	**Module 1**	**Module 2**	**Module 3**		
Normal Operation						
Update Frequency		11h	12h	13h		
Tune Up		63h	73h	83h		
Tune Down		64h	74h	84h		
Seek Up		65h	75h	85h		
Seek Down		66h	76h	86h		
Stereo/Mono Toggle		1Eh	1Eh	1Eh		
Band Toggle		4Dh	4Dh	4Dh		
Preset Up		17h	1Dh	4Eh		
Preset Down		18h	18h	18h		
Update Deemphasis		45h	45h	45h		
Deemphasis Toggle		44h	44h	44h		
Update Filter		3Fh	3Fh	3Fh		
Filter Toggle		3Eh	3Eh	3Eh		
Update AM Seek Level		A0h	A0h	A0h		
AM Seek Level Up		A1h	A1h	A1h		
AM Seek Level Down		A2h	A2h	A2h		
Update FM Seek Level		B0h	B0h	B0h		
FM Seek Level Up		B1h	B1h	B1h		
FM Seek Level Down		B2h	B2h	B2h		
Update WX Seek Level		C0h	C0h	C0h		
WX Seek Level Up		C1h	C1h	C1h		
WX Seek Level Down		C2h	C2h	C2h		
Preset Mode *		D0h	D0h	D0h		
*or send 0,0,enter from keypad						
Update Software Version		DDh	DDh	DDh		
In Preset Mode						
Select Preset/Character Up		65h	75h	85h		
Select Preset/Character Down		66h	76h	86h		
Select Character Up		63h	73h	83h		
Select Character Down		64h	74h	84h		
Delete Preset		1Eh	1Eh	1Eh		
Escape From Preset Mode		4Dh	4Dh	4Dh		
Numeric Command Format	**Start**	**Constant**	**Constant**	**Numeric**	**IDcode**	**End**
6 characters total				**Command**		
	B8h	4Dh	97h		**Bus + Mod#**	B8h
					0=00h 1=03h	
					1=10h 2=04h	
					2=20h 3=05h	
					3=30h	
					4=40h	
					5=50h	
					6=60h	
					7=70h	
					8=80h	
					9=90h	
Number 0				30h		
Number 1				31h		
Number 2				32h		
Number 3				33h		
Number 4				34h		
Number 5				35h		
Number 6				36h		
Number 7				37h		
Number 8				38h		
Number 9				39h		
Decimal Point				2Eh		
Enter				2Ah		
Feedback Format	**Start**	**12 display**	**Characters**	**Bus**	**Module ID**	**End**
16 characters total	0Fh	Display	Characters			F0h
				0 = 30h	Mod 1 = 80h	
				1 = 31h	Mod 2 = 40h	
				2 = 32h	Mod 3 = 20h	
				3 = 33h		
				4 = 34h		
				5 = 35h		
				6 = 36h		
				7 = 37h		
				8 = 38h		
				9 = 39h		

RS-232 Codes - IRL Codes

IRL-3000
Programmable 8 device Infrared controller, 21 codes per device with programmable feedback labels. IRL-3000 is wired as a function and is considered as a source.
IDCODE1 = 50h
IDCODE2
If IRL Program has “fill in feedback” selected
Output (50,51,52,53,54,55,56,57)=(Output 1-8 for Address 1)
Output (58,59,5A,5B,5C,5D,5E,5F)=(Output 1-8 for Address 2)
Output (60,61,62,63,64,65,66,67)=(Output 1-8 for Address 3)
Output (68,69,6A,6B,6C,6D,6E,6F)=(Output 1-8 for Address 4)
Output (70,71,72,73,74,75,76,77)=(Output 1-8 for Address 5)
Output (78,79,7A,7B,7C,7D,7E,7F)=(Output 1-8 for Address 6)
Output (80,81,82,83,84,85,86,87)=(Output 1-8 for Address 7)
Output (88,89,8A,8B,8C,8D,8E,8F)=(Output 1-8 for Address 8)
Output (90,91,92,93,94,95,96,97)=(Output 1-8 for Address 9)
If IRL Program has “fill in feedback” deselected
IDCODE2 = 50h (Output 1-8 for any Address). All feedback strings will have an IDCODE2 = 50h.

FUNCTION: MAIN BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 60h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 61h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 62h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 63h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 64h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

RS-232 Codes - IRL Codes (Cont.)

FUNCTION: BUTTON (stop) SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 65h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 66h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: 0 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 67h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: 1 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 68h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: 2 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 6Ah
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h
FUNCTION: 3 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 6Bh
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: 4 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 69h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: 5 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 6Ch
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: 6 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 6Dh
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: 7 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 6Eh
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: 8 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 6Fh
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: 9 BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 71h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: * BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 72h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: ENTER BUTTON SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 70h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

RS-232 Codes - IRL Codes (Cont.)

FUNCTION: POWER ON (no access from MC-3XXX) SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 73h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h

FUNCTION: POWER OFF (no access from MC-3XXX) SENDS TO OUTPUT
CONTROLBYTE 0: B8h
CONTROLBYTE 1: 77h
CONTROLBYTE 2: 74h
CONTROLBYTE 3: 60h + Output (0,1,2,3,4,5,6,7)=(Output 1-8)
CONTROLBYTE 4: 80h + Address (0,1,2,3,4,5,6,7,8)=(Address 1-9)
CONTROLBYTE 5: B8h
Feedback: 0Fh (12 CHARACTER DATA) IDCODE1 IDCODE2 F0h